The Newspaper of Information Systems Management
August 14, 1995, Vol. 29, No. 33, 150 Pages, $6/Copy, $48/Year

COMPUTERWORLD

Survey: Microsoft Net not such a big threat

By Stuart J. Johnston
and Gary H. Anthes

What if Microsoft built a network and nobody came?

While that isn't likely to happen with The Microsoft Network, an exclusive *Computerworld* survey of Windows 95 beta testers last week found that business users' interest in the company's foray into on-line services is only lukewarm.

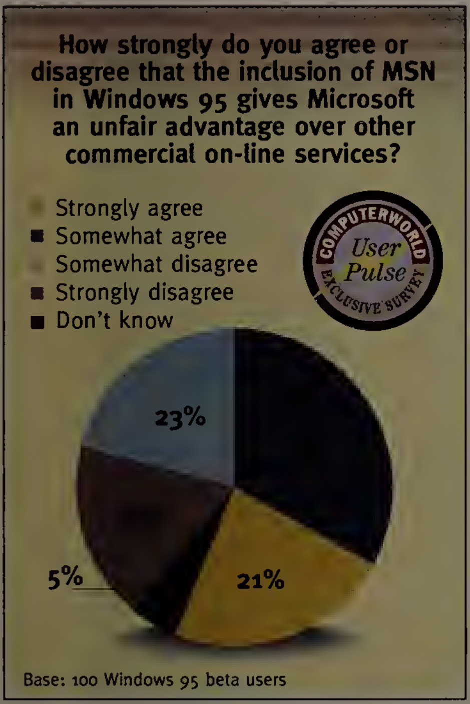
In fact, only 8% of the 100 Windows 95 users surveyed said they would totally switch to MSN and discontinue using other on-line services and the Internet. All of the users surveyed use one or more on-line services.

An additional 57% said they would use MSN but would continue using other services, while nearly 30% said they would skip MSN altogether.

When it comes to the looming competitive threat to other on-line service providers, the survey indicated that Microsoft's bundling of MSN with Windows 95 may not give the vendor the vast advantage that its on-line rivals fear.

The Department of Justice apparently isn't convinced either. Last week the department said it wouldn't take antitrust action against Microsoft over the bundling of MSN in Windows 95 before the operating system ships late next week. The Redmond, Wash.-based software giant announced pricing for its net-

Microsoft, *page 16*


How strongly do you agree or disagree that the inclusion of MSN in Windows 95 gives Microsoft an unfair advantage over other commercial on-line services?

Base: 100 Windows 95 beta users

Bonanza time!

Cabletron to offer freebies, incentives to entice customers

By Laura DiDio and Bob Wallace

Less than a week after Cabletron Systems, Inc. scrapped plans to spoil 3Com Corp.'s acquisition of Chipcom Corp., the Rochester, N.H.-based hub maker is set to launch a pre-emptive strike aimed at undermining those rivals.

This week, the company will unveil a multifaceted initiative, called the Cabletron Advantage Program, that includes thousands of dollars worth of product buybacks and free promotional offers, *Computerworld* has learned.

Good through August 1996, the program is being put in place to induce discontented Chipcom users to switch to Cabletron equipment.

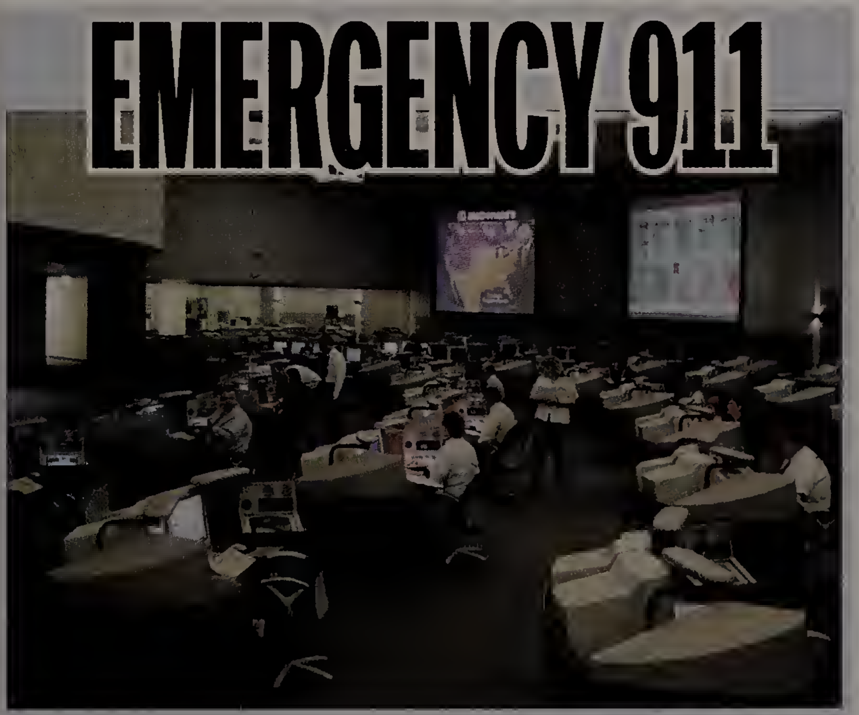
Analyst Daniel Briere, president of TeleChoice, Inc., a consultancy in Verona, N.J., called the Cabletron offer "a sensational program that will be a big hit because there are absolutely no strings attached, which is rare with incentive deals."

Among the incentives Cabletron will offer are the following:

- Free round-trip tickets and hotel accommodations to visit Cabletron's New Hampshire headquarters for midsize or large corporate 3Com or Chipcom users contemplating switching to Cabletron gear. Customers will get to test and view the equipment, the company's technical support center and manufacturing facilities. The prospective customers are under

Cabletron, *page 15*

> **"I'll add whipped cream to the deal and put my money where my mouth is to grab as much business as we can from 3Com and Chipcom."**
>
> **— Bob Levine, President and CEO, Cabletron**



The Chicago 911 Emergency Communications Center *will let dispatchers quickly transmit detailed historical and event data to police officers responding to emergencies and crimes in progress*

People issues plague IS

Political infighting, intense retraining take heavy toll

By Julia King
CAMBRIDGE, MASS.

Client/server deployment

Forget network-based messaging software, object request brokers and other leading-edge technologies. People issues are the real root of the problems plaguing deployment of client/server and object-oriented information systems, a sampling of industry experts and users said last week.

Also thwarting new systems initiatives, they agreed, are mixed messages from upper management and outdated compensation scenarios for IS professionals.

Take the example of the Chicago Mercantile Exchange, which is building a massive client/server system for clearing trades in real time. The critical need there is not for more or better C++ programmers or graphical user interface builders.

Rather, it is for "people who know how to ask users questions about what they need and want," said Kate Meyer, president of the exchange. The lack of such people leads to longer development cycles with endless missteps, many of which could have been avoided with proper communication, she added.

Then consider Coopers & Lybrand, which has all of the hardware, software and technical exper-

People, *page 115*

Newspaper

High-speed network gears up to save lives

By Laura DiDio
CHICAGO

Mother's Day 1990. Two veteran cops answer a routine domestic disturbance call involving an elderly woman and her grandson.

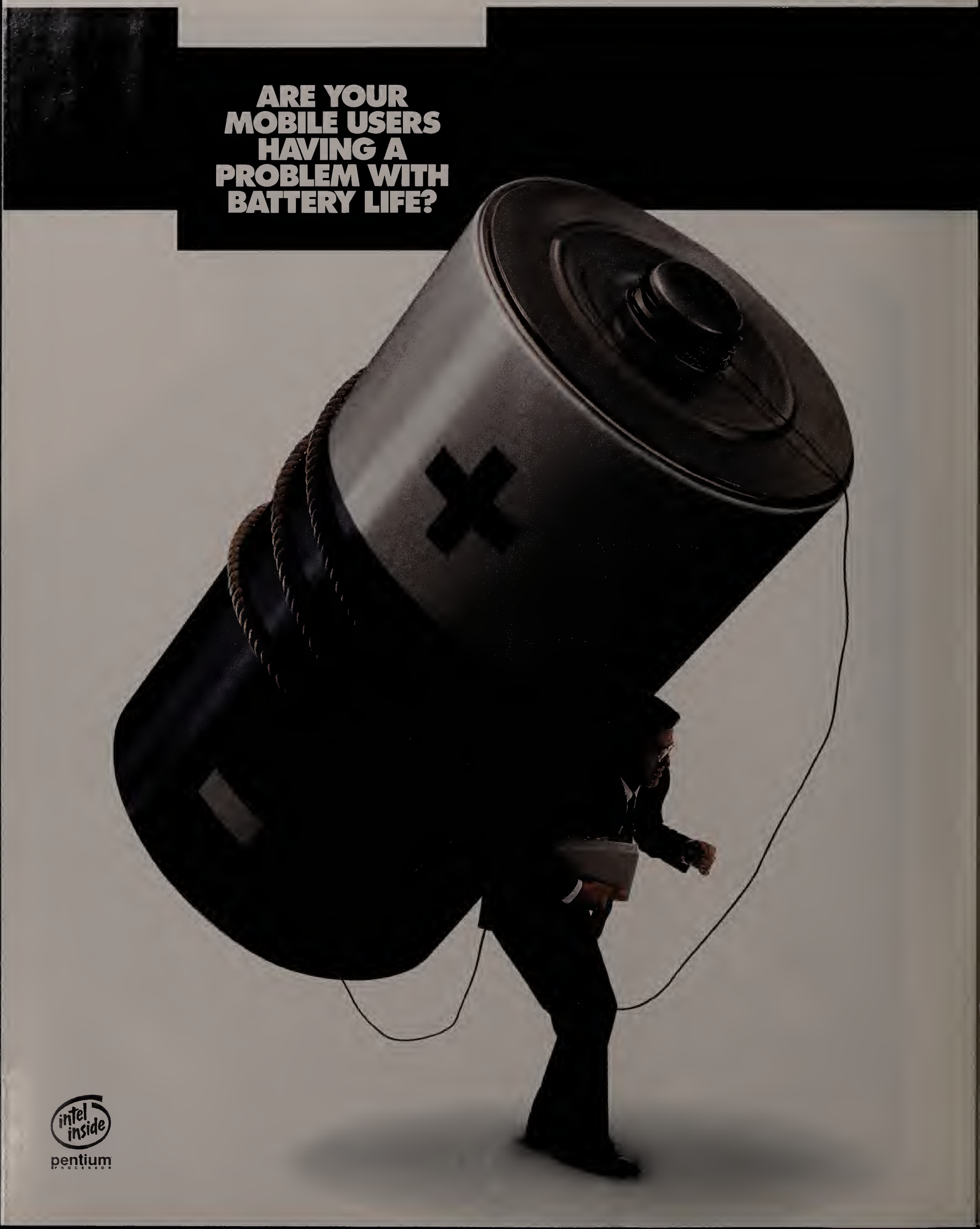
Minutes later, both officers are dead, slain by a 22-year-old man with a history as a violent offender. He had reportedly vowed to kill the next officer who "got in his face."

The pair might be alive today if the new Chicago 911 Emergency Communications Center network had been operational, said Henry Gralak, a former police officer who is now an assistant 911 project manager.

The city hopes that saving lives will be one of the many benefits of the $215 million state-of-the-art network, which is set to go on-line next month.

Those two officers "went into the situation blind," Gralak

911, *page 115*


ARE YOUR MOBILE USERS HAVING A PROBLEM WITH BATTERY LIFE?
intel inside
pentium
PROCESSOR

Inside Computerworld

August 14, 1995

News

2 **Microsoft launches management tool**
Microsoft unveils a client/server desktop management tool, SMS 1.1, that could give NT a leg up on NetWare 4.1.

4 **R.I.P.**
Wang user group dies.

6 **IBM, AT&T make Notes**
IBM merges its IBM Global Network with Lotus' Notes, while AT&T makes its Network Notes service commercially available.

7 **Network management**
Now that Computer Associates has gotten hitched to such network management leaders as Hewlett-Packard, Microsoft and Sun, can a CA/IBM marriage be far behind?

8 **Remote relief**
AirSoft releases software that more than doubles application performance over dial-up links.

10 **Making room at the Inn**
Holiday Inn completes the first phase of an automation project for its worldwide sales force.

12 **Looking good, TCP/IP**
TCP/IP has a bright future, according to expo attendees.

14 **Mac attack**
Pooh-poohing Windows 95, Macworld Expo attendees trumpet the Macintosh as the real thing.

20 **Borland's future**
Borland holds hands at its annual developers conference, trying to convince customers it is financially and technically able to help them move to Windows 95.

28 **Training**
Companies have money for IS training but no time to spend it.

COMPUTER INDUSTRY

32 **Multimedia mecca**
New York's grit and grime are far-removed from sleek Silicon Valley, but multimedia developers are taking a bite of the Big Apple.

OPINION

35 **Enough already**
America Online should stop whining about Microsoft and worry about its own annoyed customers, **Gary J. Beach** says.

35 **Mac won't go away**
John Gantz says IS will have to support pockets of Apple Macintosh users even after the Windows 95 conversion.

The Registration Wizard *in Microsoft's Windows 95 continues to create controversy: Some users — and Ralph Nader — insist it constitutes an invasion of privacy.* News, Page 16

Choice Cuts

ANDY FREEBERG

"There's more and more stuff on-line every month, and less and less of it is useful," *says security expert and best-selling author Cliff Stoll.* In Depth, Page 85

Windows database management systems *have become very easy to use, but they have IS reaching for the aspirin.* CW Guide, Page 77

13,212,887
123,222

Technical Sections

DESKTOP COMPUTING

37 **DOS lives**
With Hurricane Windows 95 looming, WordPerfect releases a new version of its DOS word processor for those who want to avoid upgrade costs.

37 **Cold boot on Everest**
Notebooks help climbers reach the summit of Mount Everest.

WORKGROUP COMPUTING

45 **The networked office**
Office equipment such as copiers will join the LAN if a new consortium has its way.

ENTERPRISE NETWORKING

51 **NetWare 4.1 upgrades**
Users looking for a way to make life easier when upgrading to NetWare 4.1 might find relief from Simware.

54 **The Internet page**
The Microsoft Network prompts Prodigy and CompuServe to upgrade their on-line services.

LARGE SYSTEMS

59 **IBM delays**
IBM postpones Magstar, its replacement for 3480/3490 tape storage.

59 **Manufacturing processes**
Manufacturers may find SAP AG's new software beautiful once they get the thorns out of their thumbs.

APPLICATION DEVELOPMENT

63 **Du Pont retools**
Du Pont signs up Andersen Consulting to make its programmers more efficient.

COMPUTERWORLD

Leadership Series

The Eastern Road to IT

Coming next week:
The Japanese are way behind in information technology, right? Wrong. 7-Eleven Japan uses it to replenish shelves every eight hours, and Wal-Mart, for one, wants to know how. In next week's Leadership Series, author Shujo Honjo reveals Japan's unique approach.

Features

MANAGEMENT

67 **An IS dose for drugmakers**
Pharmaceutical firms are taking a high-tech cure to help regain profits lost due to changes in the health care industry.

CAREERS

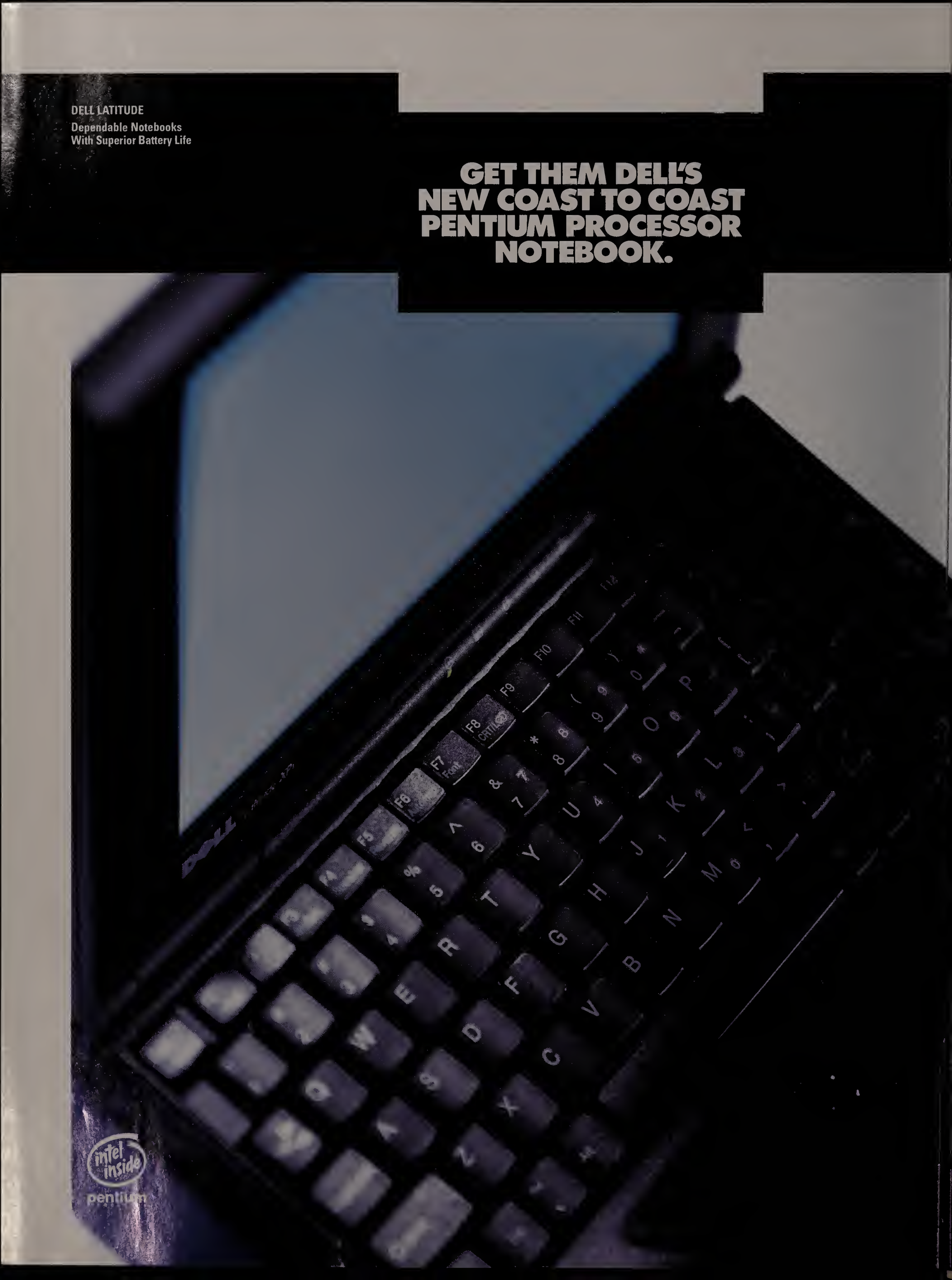
93 **Technology overload**
How to get a handle on the skills you need to stay competitive.

MARKETPLACE

104 **Trojan horse**
The real cost of using desktop databases.

Etc.

Calendar 74
Company Index 112
Editorial/Letters 34
Inside Lines 116
Aug. 11 Stock Ticker 113
How to contact CW 116


DELL LATITUDE
Dependable Notebooks
With Superior Battery Life
GET THEM DELL'S NEW COAST TO COAST PENTIUM PROCESSOR NOTEBOOK.
intel inside
pentium

Dell shattered battery life records with the award-winning Latitude XP. Now introducing the Latitude XPi. The notebook designed to set a new standard for battery life in Pentium processor-based notebooks.

DELL LATITUDE™ XPi
90MHz PENTIUM PROCESSOR
- 10.4" Active Matrix Color Display
- 16MB RAM
- 810MB Removable HDD
- 3 Year Extended Warranty[†]

$5399[‡] Product Code #600112
[‡]Single unit promotional price.

DELL LATITUDE XPi
90MHz PENTIUM PROCESSOR
- 10.4" Dual Scan Color Display
- 8MB RAM
- 810MB Removable HDD
- 3 Year Extended Warranty[†]

$3999[‡] Product Code #600113
[‡]Single unit promotional price.

DELL LATITUDE XPi
75MHz PENTIUM PROCESSOR
- 10.4" Dual Scan Color Display
- 8MB RAM
- 340MB Removable HDD
- 3 Year Extended Warranty[†]

$3199[‡] Product Code #600101
[‡]Single unit promotional price.

Introducing Dell's New Pentium Processor Notebook.

Whether they're on the road, in the air, or in the field, your users shouldn't have to suffer with a Pentium® processor-based notebook that only lasts an hour or two.

Introducing the Dell® Latitude™ XPi. The first Pentium processor-based notebook that can last take-off to touch-down. Coast to coast.

You won't find another notebook that can offer the power of a Pentium processor. And a 10.4" display with high-speed video. And this much battery life.

How much battery life?

Well, according to recent "Cross-Country"™ tests by VeriTest, inc., the Dell Latitude XPi P75 dual scan notebook lasted an average of 4 hours and 40 minutes.[*] That's LA to New York, no problem. Of course, actual battery life will vary depending on nature of use and configuration. Your users might get even more.

How do we do it?

For one thing, the Dell Latitude XPi is the first notebook to use Intel's 2.9 volt LM Pentium chip, specifically designed for mobile computing.

But there's more to longer life than a chip.

Dell's smart Lithium Ion battery pack design includes an embedded microprocessor that allows the battery cells to charge faster and hold a charge longer than the cells in other notebooks. (We charge up to 15% higher, in fact.)

And our power management software adjusts power consumption based on how your users work. We even go so far as to power down system components when they're not in use. All without interrupting your users. So whether they have ten applications open at once or keep their notebooks on all day, they'll get better battery life.

Without sacrificing a thing.

Just call our national account team and try the Dell Latitude XPi. The only Pentium processor-based notebook that can last coast to coast.

DELL®
(800) 626-8460

Keycode #12055

---

[*] The VeriTest Cross-Country v2.0 test simulates typical executive use of Microsoft Office® applications in Microsoft Windows® v3.11 during an airplane flight. Power management was enabled and 8MB of RAM was installed. VeriTest, inc. is located in Santa Monica, CA. [†]For a complete copy of our Limited Warranties, please write to Dell USA L.P., 2214 W. Braker Lane, Bldg. 3, Austin, TX 78758. Prices and specifications valid in the U.S. only and subject to change without notice. Pentium and the Pentium processor logo are registered trademarks of Intel Corporation. ©1995 Dell Computer Corporation. All rights reserved

Microsoft boosts management tool

By Steve Moore

Microsoft Corp. last week unveiled Systems Management Server (SMS) 1.1, an upgraded version of its PC software distribution, configuration and inventory management package.

SMS 1.1 boasts added support for Windows 95, Windows NT 3.51 and SQL Server 6 along with other new features (see chart).

New features in Microsoft's SMS 1.1 include the following:

- Package Definition File to aid in Windows 95 installations
- Desktop Management Interface (DMI) format for event messages so they can be passed to other management applications that support DMI
- User control of hourly WAN bandwidth use when distributing software

While most users gave the package a thumbs-up, others said there could be glitches in deploying Windows 95 via SMS in companies with multivendor environments. For example, users need to install the correct versions of both SMS and Windows NT — required for SMS on the server side.

"We've loaded Windows 95 on a dozen different PCs, and it hasn't worked without tweaking on a single one of them," said Adam Lynn, a senior LAN engineer at Micro Research Industries in Alexandria, Va., and an SMS user. While "the things we've had to tweak were not really difficult problems," he said SMS users would be well-advised to roll out Windows 95 gradually, department by department.

The NT decision

Analysts said SMS' dependence on Windows NT servers could tip the balance to NT for shops weighing server choices.

While recent market research by Dataquest, Inc. indicate that users are moving "just about equally" to NT and NetWare 4.1, "this could push them more toward NT because once you use an NT server to do a deployment, then there will be a tendency to use NT as a platform to do wider deployments," said Rob Enderle, a principal analyst at the San Jose, Calif., firm.

"We're pretty much dedicated to Windows NT for the desktop, and the most difficult things about NT are its newness and the lack of third-party tools for managing it," said Richard Weiss, technical lead for systems and network management at Charles Schwab & Co. in San Francisco. While Schwab currently uses SMS for managing PCs, "we need something that spans both desktop and server environments and SMS doesn't," he added.

What's new

Users applauded new features in SMS 1.1. "One of the best additions is the ability to regulate the amount of [wide-area network] bandwidth you're using for [software] distribution jobs," said Larry Shaw, PC coordinator for client/ server support at Nordstrom, Inc. in Seattle. "The Windows 95 transition is a bit further off for us."

Another user hailed Microsoft's plan this fall to provide low-cost, step-by-step documentation for using SMS to deploy Windows 95. "That would be a big help," said Gary Darby, network design manager at Pennzoil Co. in Houston. He said the oil company's process for upgrading Windows for Workgroups machines to Windows 95 takes about 45 minutes per desktop using SMS.

Microsoft is providing a Windows 95 deployment script with SMS 1.1. But users needing to write scripts for deploying other software will have to buy the $599 Microsoft Test package.

& **Users may soon be able to** manage office equipment over their network. See page 45.

Correction

The column "Internet road hogs should pay more!" [CW, July 17] should have said that sending 30 *seconds* of video over the Internet is equivalent to sending 10 500-page books. The version of the column that was published was an early draft that was mistakenly sent by a public relations agency without the author's approval.

Lotus packages up SmartSuite for Win 95

By Cheryl Gerber

Lotus Development Corp. will shoot the Windows 95 version of SmartSuite out of the gate in late October with team computing and productivity enhancements. It hopes these features will lure users to the applications portfolio and the Notes workgroup system.

Freelance Graphics will be the first of the SmartSuite applications to be ready for Microsoft Corp.'s Windows 95, Lotus executives said last week. New 32-bit versions of Word Pro (formerly Ami Pro) word processing software, 1-2-3 spreadsheet software and the Approach desktop database will follow in late October.

The Cambridge, Mass., company will announce pricing and exact ship dates for its Windows 95 SmartSuite packages at the Hal user conference in Houston on Sept. 5.

The network-enabled Freelance Graphics for Windows 95 was written from the ground up in 32-bit code and integrated with Notes, said Colleen Griffiths, senior product manager of the Lotus Graphics Products group. Analysts and users said the most enticing features in the new version are TeamComputing and Content SmartMasters.

Application suites

TeamComputing includes TeamReview, which distributes presentations and consolidates global feedback from other team members, and TeamShow, which lets users lead a remote audience through a presentation.

Content SmartMasters, a productivity enhancement, provides information on 30 types of presentations. "This is not just a tool. It provides knowledge," said Chris Le Tocq, president of SoftTracks Software Research in Los Altos, Calif.

With these team computing additions to Freelance, "now we'll use it interactively for global team review of presentations," said Larry Stouder, manager of technical development at Continental Grain Co. in New York.

Some Notes users viewed the team computing feature in Freelance as more of a Notes enhancement. "The Windows 95 Freelance adds the presentation review process to Notes," said Neal David, director of marketing information systems at Waters Corp., a scientific equipment manufacturer in Milford, Mass.

Other SmartSuite applications for Windows 95 were also written from the ground up in 32-bit code, rather than being ported from a 16-bit code base in Windows 3.1.

According to Lotus sources, the new Word Pro will usher in Internet support for opening files from either a file transfer protocol (FTP) or World Wide Web server, editing in Word Pro and saving files to FTP. Word Pro for Windows 95 also will ship with a TCP/IP network protocol stack and support extensions to Netscape Communications Corp.'s Netscape browser.

Word Pro will also offer various team computing functions such as Document Versioning, which lets users store edits of a document in a single file. TeamMail will allow users to route documents to individuals or groups based on different messaging backbones.

The productivity enhancements in Word Pro Windows 95 include SmartMasters, which set up documents from a list of categories and guide the user within the document. SmartControls provide divider tabs for organizing and navigating through long doucments, and a feature called Ask The Expert provides interactive help.

Testing SmartSuite

Lotus will announce on Sept. 5 that it will release SmartSuite for Windows 95 in October. The following are the current stages of testing for the suite's various applications:

Word Pro	In late beta
Organizer	In alpha
Approach	In mid-beta
Freelance	In late beta
Lotus 1-2-3	In alpha

Microsoft gives ATM blessing

By Bob Wallace

Microsoft Corp. last week entered the fast-expanding Asynchronous Transfer Mode (ATM) industry when it announced plans to license so-called "LAN emulation" software for its various Windows operating systems.

LAN emulation technology lets applications for Ethernet and Token Ring LANs run on ATM LANs. Emulation allows users on legacy LANs to communicate with those on ATM LANs.

"Microsoft's entry into the ATM market validates the technology and makes ATM real to a huge number of users," said Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy. "They're committing themselves to make applications ATM-ready."

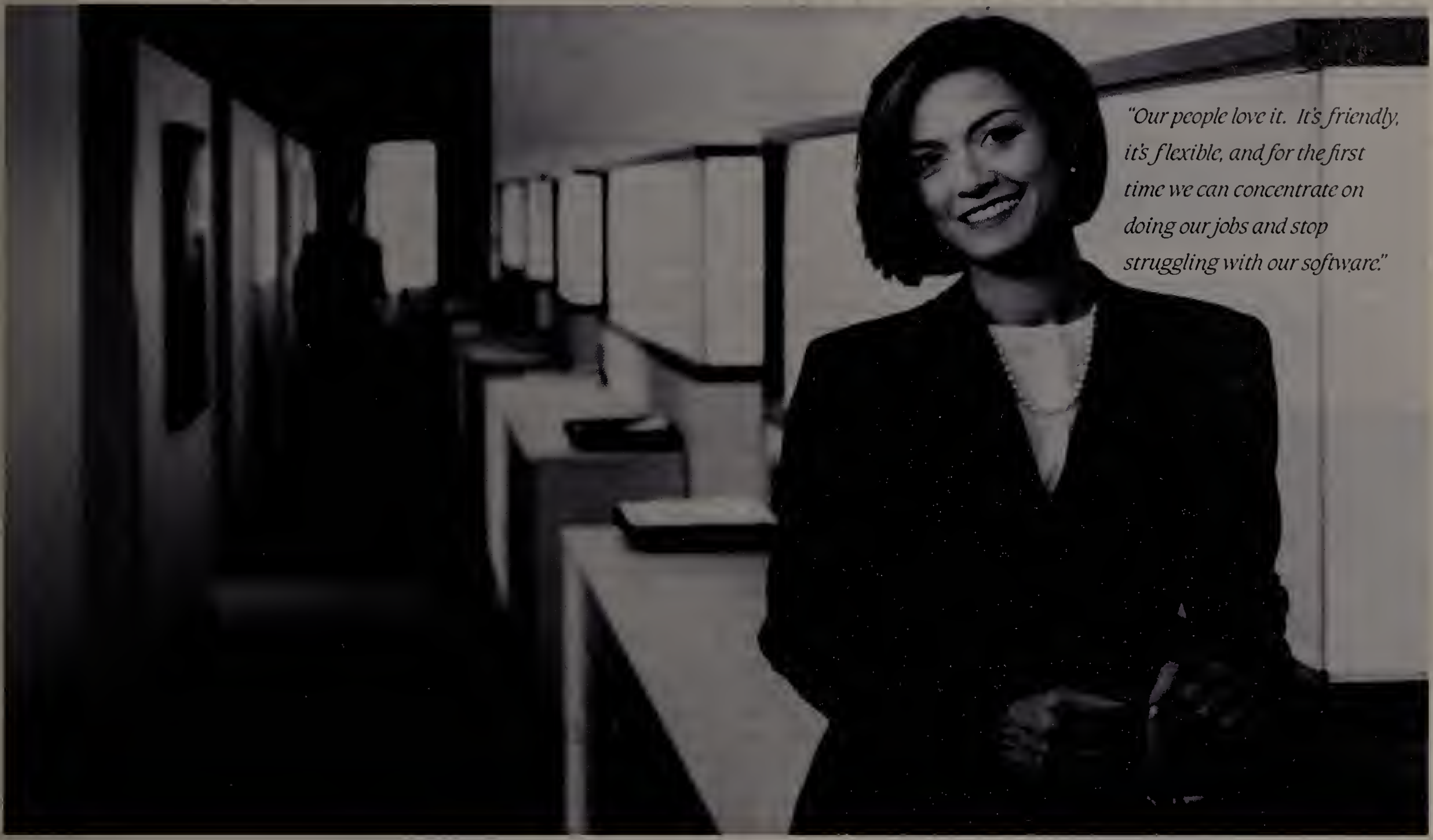
Microsoft isn't the first major network operating system vendor to embrace ATM's high-speed switching technology. Novell, Inc. is working hard to bring ATM to NetWare. "Microsoft's joining the ATM fray could be viewed as a defensive move," Nolle said. Microsoft doesn't want users to have to go with NetWare in order to get ATM functionality, he added.

ATM cards

Microsoft is licensing LAN emulation client and server software from Olicom, Inc., which also sells a 155M bit/sec. Extended Industry Standard Architecture bus ATM card. By year's end, Olicom plans to have both Peripheral Component Interconnect and Industry Standard Architecture adapters for 25M bit/sec. and 155M bit/sec. ATM cards.

Olicom needs to offer both speeds, observers said, because many users don't need or can't afford 155M bit/sec. ATM cards.

Presenting The Human Resource Software That's Designed For Humans.



"Our people love it. It's friendly, it's flexible, and for the first time we can concentrate on doing our jobs and stop struggling with our software."

It seems pretty obvious, doesn't it?

Human resource software that's designed for the people who use it — instead of the computers that run it. But for whatever reason, it's never happened.

Until now.

Introducing new CA-HRISMA™.

It's flexible. Friendly. And incredibly easy to work with. An abundance of end-user access and customization options will keep everyone from the power user to the beginner smiling.

That's because CA-HRISMA was designed by HR professionals for HR professionals. For the past two decades we've helped thousands of clients take care of millions of employees. And now we've put all that experience and technology into new CA-HRISMA.

Basic Hire
Quick Hire
Job/Pay
Check/DDP
Earnings
Taxes
Benefits
Defined Contributions
Career Development
Job/Pay History
Position Control
Position Hire
Position Job/Pay History
Applicant
Applicant Hire

The Human Approach To Human Resource Software
Free
Demo Disk
Computer Associates

It's a completely integrated solution that covers all your payroll, personnel and benefits needs with true client/server, GUI-based software that supports both distributed and centralized processing.

Call 1-800-225-5224, Dept. 50102, For A Free Demo Disk And Booklet.

Call today and find out just how human your human resource software could be.

COMPUTER® ASSOCIATES
Software superior by design.

Introducing CA-HRISMA™

THE HUMAN RESOURCE SOFTWARE THAT'S DESIGNED FOR HUMANS

© Computer Associates International, Inc., Islandia, NY 11788-7000. All product names referenced herein are trademarks of their respective companies.

Unix and PC platforms jostle on graphics front

By Jean S. Bozman

LOS ANGELES

Computer graphics — that eye-catching software used in movie special effects, car design and wind-tunnel simulation — is fast becoming a key battleground in the face-off between Unix workstations and PCs.

Users attending last week's Siggraph '95 show here agreed that the two platforms are converging. But they are betting that Unix workstations will continue to offer better performance, albeit with a heftier price tag.

Microsoft's Softimage Eddie package, *which created this 3-D image, runs on SGI's Unix but is being ported to Windows NT*

Cost is one factor pushing graphics to low-cost PC platforms, and the sheer ubiquity of PCs is another. At Xerox Corp.'s Palo Alto Research Center in Palo Alto, Calif., PCs are taking their place alongside Unix workstations on researchers' desks, said Eric Bier, research area manager for the center's information sciences and technologies lab.

"We're in a transition period, but people are getting more excited about PCs," Bier said. Now, the researchers will start programming visual applications on PCs and test-driving PC peripherals.

Yet even PC advocates don't think the transition to PC graphics platforms will happen overnight — or remove the need for high-end systems.

"There's no question that specialized needs require specialized hardware, and that will always be the case," said Eric Brechner, a software design engineer at Microsoft Corp.'s advanced authoring tool unit in Redmond, Wash. "The difference is that the specialty market today will become the consumer market tomorrow."

The gap between Unix workstations and PCs will narrow further with the arrival of Intel Corp.'s P6 chip this fall, users and vendors at the show said.

Software vendors such as San Diego-based Template Graphics Software, Inc. and Intergraph Corp. in Huntsville, Ala., are now selling engineering design packages for Intel Pentium machines running Microsoft's Windows NT. Until recently, most visualization and three-dimensional graphics software made its debut on Unix systems.

"It's driven by what our customers want," said Peter Kane, a software designer at LightWork Design in Sheffield, England. "We're drifting more and more into the use of PCs."

Still, PC users should prepare to add memory, video cards and peripherals to get the most out of graphics packages.

"The hidden cost of PCs is the amount of time it takes to configure them with all the options for graphics," one user said. Yet a typical Unix workstation costs $40,000 or more — and some high-end graphics packages can cost just as much, said Hoyt Yeatman, co-owner of Dream Quest Images, a Hollywood studio.

Products aplenty

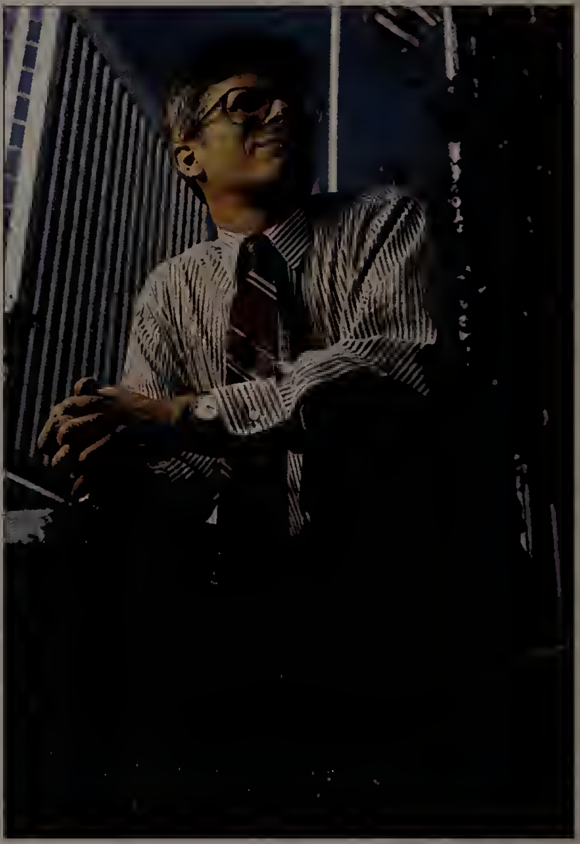
The products making their debut at Siggraph '95 last week included the following:

- **Silicon Graphics, Inc.** announced a new software architecture, called Maya, that will combine the graphics formats used by two firms it recently acquired, Alias Research, Inc. and Wavefront Technologies, Inc., by sometime next year. Maya will support new types of user interfaces for graphics designers.
- **SunSoft, Inc.** announced it will support SGI's OpenGL graphics libraries standard with application interfaces to Sun's Solaris 2.x Unix operating system. The native implementation of OpenGL will be available for Sun's SPARC and Intel Corp.'s X86 and PowerPC machines by next summer, SunSoft said.
- **Sense8 Corp.** in Mill Valley, Calif., announced a new release of its World Up virtual reality software tool kit that doesn't require knowledge of C programming. The tool kit has syntax akin to that used in Microsoft's Visual Basic application development language, the firm said. It is priced at $3,500 and will ship next month.

User group folds

Dwindling membership, financial woes bring an end to International Society of Wang Users

By Neal Weinberg


JAMES SCHNEPF

Wang user group's John DaSilva *says the demise of the group is 'just a natural evolution' though some members are upset with Wang*

Wang Laboratories, Inc. survived a 1992 bankruptcy filing, but its user group has gone belly up.

The International Society of Wang Users died peacefully this summer at age 14 after a long decline.

The causes of death were plummeting membership, dwindling attendance at conferences and an anemic financial situation. Months of negotiations aimed at getting Wang to provide a last-ditch transfusion failed, so the board voted simply to pull the plug.

The user group, mindful of keeping its independence, wasn't looking for a handout from Wang; it wanted to participate with Wang in a trade show that would generate enough profit to keep the group going. But the two sides weren't able to reach an agreement.

"I'm very sad about it," said Bert Regensburger, director of MIS at Jewels by Park Lane in Schaumberg, Ill., president of the user group. He said the lengthy and ultimately fruitless negotiations with Wang "left a bitter feeling with me."

But John DaSilva, systems development manager at the Gas Research Institute in Chicago and user group treasurer, was more philosophical. "It's just a natural evolution," he said.

Wang went into bankruptcy a minicomputer maker and emerged a software and services provider. The company continues to service and upgrade its proprietary VS line and helps users transition to open systems, but the VS base is clearly declining.

R.I.P.
WANG
USER
GROUP

Regensburger said VS users today fall into two camps — either they are moving to open systems, or they are standing pat. Either way, they are not that interested in "spending money on educational forums related to Wang," he said.

Last year, the user group tried to spark some interest by moving its conference from Boston to Orlando, Fla., but the show was still a money loser.

Membership last year dwindled to 125 companies, and there was no real effort this year to even seek annual dues.

DaSilva said the user group still had a role to play in providing information to VS customers. "Unfortunately, the large majority didn't think so," he said.

"It's regrettable the user group had to close," said Chet Webster, director of marketing for Wang's service business. He emphasized that Wang, based in Billerica, Mass., is committed to supporting its VS customer base through its own sales force. He pointed out that Wang will put on its own conference this fall. InterAction will be held Oct. 17-20 in Boston.

DaSilva agrees users seem to be "getting the attention they need from Wang."

Hard feelings

Still, there is some lingering resentment. The user group says it stood by Wang in its darkest hour, helping set up meetings across the country so Wang executives could reassure customers about the future of the company. But when the user group had its crisis, Wang took a hard line. "It was a rocky relationship that just kept getting rockier," DaSilva said.

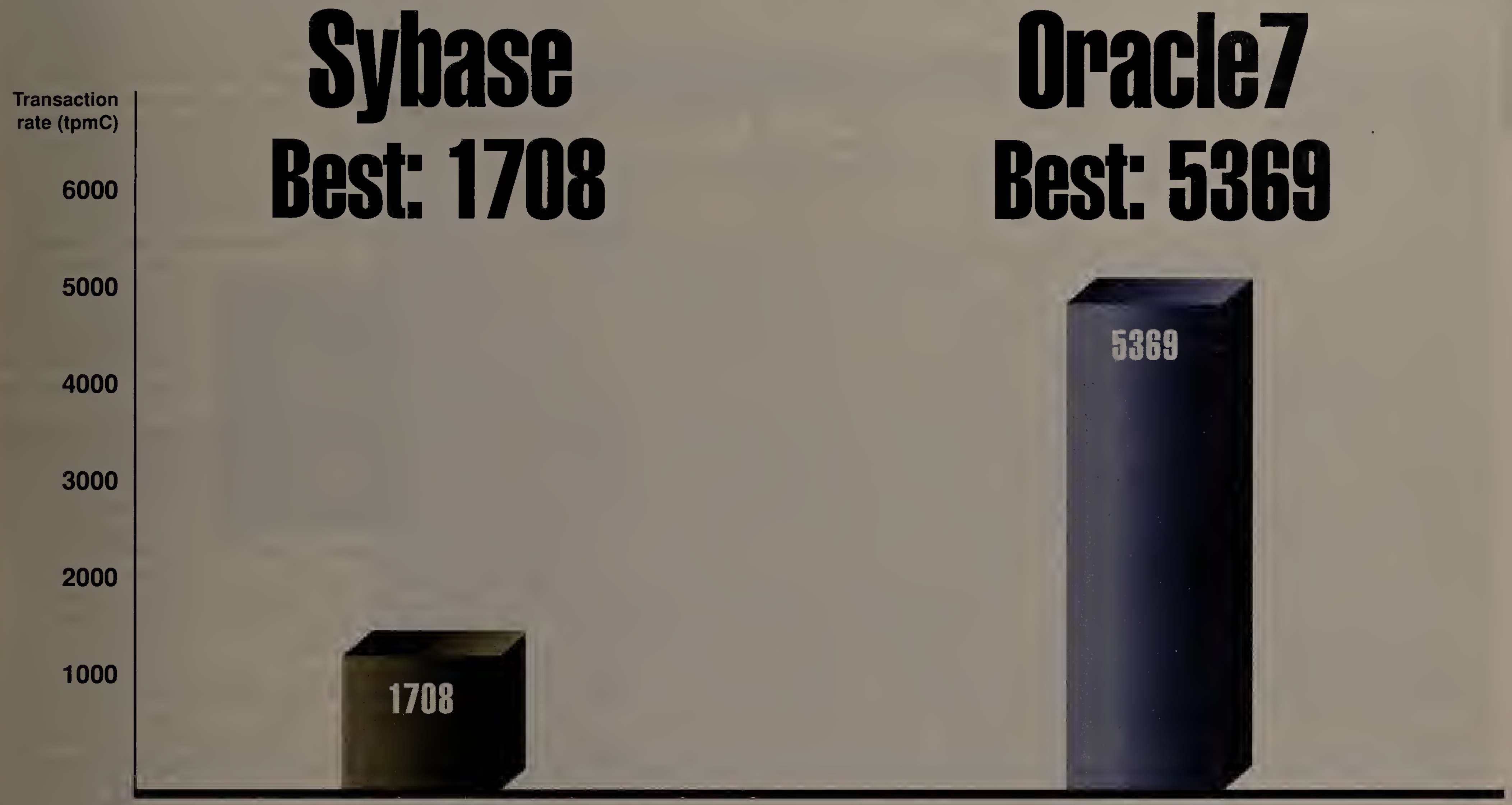
He said the two sides viewed the conference differently. The user group wanted it to be a money maker, and Wang was more interested in presenting InterAction as a marketing vehicle.

In fact, DaSilva said he has agreed to be a speaker at the event. But Regensburger said users will be losing an independent, educational forum where they can share good and bad experiences.

Even though the user group is defunct, Regensburger and DaSilva are still committed to Wang products. DaSilva, whose company is slowly moving applications to new platforms, says wistfully, "There are days when I walk around here and say, 'I'd love to have back the old Wang terminals. It was a lot less headaches.' "

Database Performance

The TPC-C™ test is the industry standard benchmark measuring database On-Line Transaction Processing (OLTP) performance. On July 24, 1995, Hewlett-Packard published an audited TPC-C benchmark of Oracle7 that set the record for open systems performance, beating Sybase System 10's best result on any computer by more than 200%. (It's almost not worth mentioning, but we also creamed Informix.)



Sybase's CEO recognizes they have technology and performance problems. So should you.

> " We were slow to realize this [scalability] was an issue in the marketplace."
> Mark Hoffman, Sybase CEO, *The Wall Street Journal*, April 14, 1995

> " We're trying to investigate the problems now. You peel back the onion, you find out more stuff."
> Mark Hoffman, Sybase CEO, *San Francisco Chronicle*, April 5, 1995

Experts and customers recognize that Sybase's problems will take a long time to fix. So should you.

> " The time between major enhancements of their [Sybase's] database is the longest of any major vendor."
> Salomon Brothers, *Computerworld*, April 17, 1995

> " They've got a lot of work to do and they have to go pretty deep in the core of the code."
> First Albany, *Information Week*, April 17, 1995

Scalability and parallelism make Oracle7 the technology and performance leader. The results of the HP TPC-C benchmark provide graphic proof.

> " Oracle has set the high water mark for open systems platforms. We look for more to come."
> Jim Johnson, Chairman, *Standish Group*, July 24, 1995

> " Oracle's TPC-C numbers dramatically alter the competitive landscape...Oracle is telling the competition to put up or shut-up."
> Peter Kastner, Vice President, *Aberdeen Group*, July 24, 1995

If you don't have time to wait for a database that is slow to run transactions or a company that is slow to fix its technology call Oracle, the proven performance leader. Find us at 1-800-633-1071, ext. 8193 or http://www.oracle.com/ on the Web.

ORACLE®

Enabling the Information Age

TPC results as of July 21, 1995. Sybase results based on Digital Alpha 2100, ($555/tpmC). Oracle results based on HP 9000 T500, ($535/tpmC).

© 1995 Oracle Corporation, all rights reserved. Oracle is a registered trademark. Oracle7 is a trademark of Oracle Corporation. TPC is a trademark of the Transaction Processing Performance Council All other product names are property of their respective owners

Notes networks

IBM keeps hands off AT&T, Lotus deal; takes Notes global

By Suruchi Mohan

Defying skeptics who charge that it wants to take the newly acquired Notes proprietary, IBM last week affirmed its commitment to Lotus Development Corp.'s year-old partnership with AT&T Corp. (see story at right). The computer giant also announced plans to put Notes on the IBM Global Network.

The move put to rest rumors that IBM would scotch the joint venture between AT&T and Lotus because of competitive concerns. But IBM's intent "is to interoperate with other networked Notes services," said Steve Weyl, general manager of collaborative services at IBM in White Plains, N.Y. "It doesn't make sense to compete on connectivity, but on quality of services."

Watching its step

"IBM will be very careful not to step on AT&T's toes," said Scott McCready, an analyst at International Data Corp. in Framingham, Mass. "IBM will take great pains to see that AT&T's investment in Network Notes pays off."

AT&T Network Notes is a subscription service for users who want to use Notes but don't want to maintain an infrastructure. For approximately $40 per month per user, the company will provide Notes access, management and maintenance.

Peter Steele, president of U.S. Technologies, Inc. in Tampa, Fla., a Lotus business partner and user of the IBM Global Network, said this is just another addition to give users a choice among wide-area network service providers. "Users can negotiate both price and services," Steele said.

On the drawing table

IBM said plans for its 40-country global network include providing Notes services such as training, design and network configuration. By early next year, IBM hopes to provide subscription services.

Additionally, both IBM and AT&T will support InterNotes Web Publisher, Lotus' Internet publishing product. This will allow documents created in Notes to be posted on the World Wide Web.

"We've been aware of AT&T's long-term commitment to InterNotes and the Web, and that's important to us," said Robert Larson-Hughes, a principal at McGladrey & Pullen, an accounting and consulting firm in Minneapolis. "We can build a pipe up to this AT&T services cloud, through which we can satisfy many [WAN] needs."

For those who want Notes immediately, AT&T may hold more appeal. It has a product and services in place, while IBM has just started its work. That scenario may change by the middle of next year, when IBM has more to offer.

"When IBM has a system as proficient as Network Notes, it's something we'd have to look at," said Jody Lane, a principal at TitleLink, an on-line title company in Dallas.

Advanced Micro Devices rolls out a Notes strategy. See page 45.

Network Notes on track, but AT&T widens focus

By Neal Weinberg

AT&T Corp. has followed through on last year's promise to offer Notes over its global public network, but the Internet explosion and IBM's purchase of Lotus Development Corp. have changed the relationship between AT&T and Lotus, analysts say.

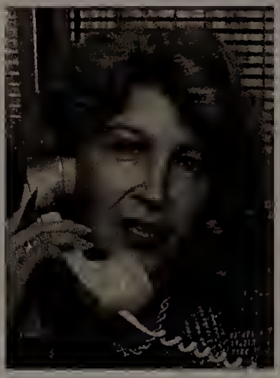
AT&T went to great lengths last week to emphasize that the alliance is "rock solid" and has been extended to the year 2000. But analyst Tom Austin at Gartner Group, Inc. in Stamford, Conn., said AT&T "doth protest too much."

Universal view

Austin said AT&T isn't about to back out on its development of Network Notes, but "the level of focus on this is diminishing." AT&T has decided to become more of a universal service provider, broadening its horizons to include an upcoming Internet service and a closer relationship with Novell, Inc. Tom Brennan, an analyst at TeleChoice, Inc. in Verona, N.J., said the issue is whether the Internet "obviates the need for Lotus Notes for intercorporate communications" [CW, Aug. 7].

He said Network Notes will appeal to two types of users: Heavy users of Notes looking for the functionality of the AT&T network, and people who for security or technical reasons "don't want to jump into the pond of the Internet." When the alliance was initially announced, the Internet was seen as less of an alternative.

First Albany Corp., which had Notes at its Albany, N.Y., headquarters, is using Network Notes to bring the groupware package to 22 branch offices in the Northeast. Telecommunications manager Helen O'Connor said First Albany plans to use Network Notes to send highly sensitive research reports to branch offices and select clients.


First Albany's *Helen O'Connor says the bank will send 'highly sensitive' reports over the network*

She said Network Notes "gives us the opportunity to take advantage of the latest in technology without having to go through the enormous expense to build a frame relay ourselves."

"I like using the Internet," O'Connor added, "but I get more of a feeling of security using AT&T Network Notes. We're putting vital proprietary information on their servers, and we spent a lot of time making sure we're satisfied with the level of security."

Ethernet links

3Com switching technology moves along at snail's PACE

By Bob Wallace

3Com Corp.'s grand plan to support voice, data and video over switched Ethernet links seems in doubt, as neither 3Com nor other vendors have announced products.

3Com's Priority Access Control Enabled (PACE) switching technology was heralded by vendors from Apple Computer, Inc. to Novell, Inc. when it was announced last October. PACE proposed a traffic prioritization scheme to let users run real-time voice and video applications over switched 10M bit/sec. Ethernet links.

Running late

PACE technology promised to let users support real-time applications that comprise data, voice and/or video traffic without replacing their Ethernet adapters and cabling. It uses a prioritization scheme to maximize 10M bit/sec. of dedicated bandwidth.

The technology was expected to let users move into multimedia applications without having the sticker shock of paying for Asynchronous Transfer Mode (ATM) technology.

Slow pace

3Com's PACE switching technology promises to do the following:

- Work with 10M bit/sec. of dedicated switched Ethernet bandwidth as opposed to 10M bit/sec. of shared-bandwidth Ethernet LANs
- Support simultaneous mixed voice, data and video applications (including multimedia) by using a prioritization scheme; not impede current data transmission
- Save users roughly 3M bit/sec. of bandwidth by eliminating traffic collisions
- Preserve users' investment in 10M bit/sec. adapter cards and cabling
- Require new PACE-enabled switches

3Com acknowledged last week that PACE "technology partners" haven't shipped any products that use PACE technology. Besides Apple and Novell, partners include Dell Computer Corp., Starlight Networks, Inc. and Sun Microsystems, Inc.

At least one 3Com user is disappointed in PACE's plodding progress.

"We plan to evaluate PACE [switches] because we're interested in supporting video, and we wouldn't have to replace [existing] adapters and cabling," said Barbara McKenzie, a software manager at Thomas Jefferson University in Philadelphia. "But we want to see other vendors license [PACE] and have other hub vendors support it."

McKenzie said she hopes 3Com will offer PACE support as a software upgrade to the LinkSwitch 1000 by year's end or early 1996.

That may be wishful thinking; 3Com has yet to put PACE in the market. 3Com plans to demonstrate PACE on its recently announced LinkSwitch 1000 Ethernet switch at Interop Paris this fall. The company wouldn't say when that package would be available.

A 3Com spokeswoman also said the company has yet to license PACE to other switch vendors; such agreements are seen as critical to the proliferation of the technology. And one potential partner says 3Com is not pushing PACE, either.

"[3Com] has never even come to us to discuss PACE," said a spokeswoman at Bay Networks, Inc.

Analysts said PACE was in danger of being passed over in favor of ATM, which supports the same application set.

"The PACE idea is worthy and isn't flawed technically, but ATM has won much wider vendor support and is capturing the minds of far more users," said Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy that tracks emerging switching technologies. "Vendors see PACE as anti-ATM."

ATM has backing and products from myriad Ethernet switch makers and other internetworking powers.

3Com has to overcome issues to bring Chipcom into the fold. See page 56.

CA/Sun make Unicenter deal

Network management

By Thomas Hoffman and Steve Moore
NEW YORK

Computer Associates International, Inc. last week added Sun Microsystems, Inc. to the list of network management vendors that have agreed to combine their software with CA's Unicenter systems management suite under a single hood.

Under a joint development, marketing and support agreement announced here by the vendors, CA-Unicenter will be integrated into a package with Sun's Solstice SunNet Manager. CA-OpenIngres will serve as a database repository.

The integration is expected to benefit users by delivering a common graphical user interface for both products and directly passing events from SunNet Manager to Unicenter. Now, the systems can share event traffic only through Simple Network Management Protocol, a method for monitoring and configuring devices and applications across a network.

Sun spots

Highlights of the integration of CA-Unicenter, CA-OpenIngres and Solstice SunNet Manager will include the following:

- Common graphical user interface for CA-Unicenter and Solstice SunNet Manager
- Direct event notification between platforms
- Choice of marketing, service and support through either vendor
- Joint product to enter beta testing by Q4 1995; scheduled to deliver in Q1 1996, starting at $25,000 on Sun's Solaris environment

The still-unnamed product, which will run on Sun's Solaris and SPARC platforms, as well as x86-based and PowerPC systems, is expected to enter beta testing by the fourth quarter. The software will then ship in the first quarter of 1996, with prices starting at $25,000 on Sun's Solaris SPARC environment, according to Scott McNealy, chairman of Mountain View, Calif.-based Sun.

"The bigger story is that CA and Sun are going at this thing together in a marketing sense," said Paul Mason, research manager of enterprise systems management at International Data Corp. in Framingham, Mass. Users will be able to choose between CA and Sun for licensing and support of the software, Mason said.

Now that Sun has joined ranks with other network management leaders that have teamed up with CA — such as Hewlett-Packard Co., Microsoft Corp. and UB Networks, Inc. — can a deal between CA and IBM be far behind?

That depends on whom you talk to. "I wouldn't be surprised if CA and IBM don't make a similar announcement in the next month," said Fred Joy, a senior research analyst at Meta Group, Inc. in Stamford, Conn. Joy declined to disclose the guts of a pending CA/IBM deal but did say several Meta Group analysts were recently briefed under a nondisclosure agreement by at least one of the vendors. "I have reason to believe this [CA/IBM deal] will happen," he added.

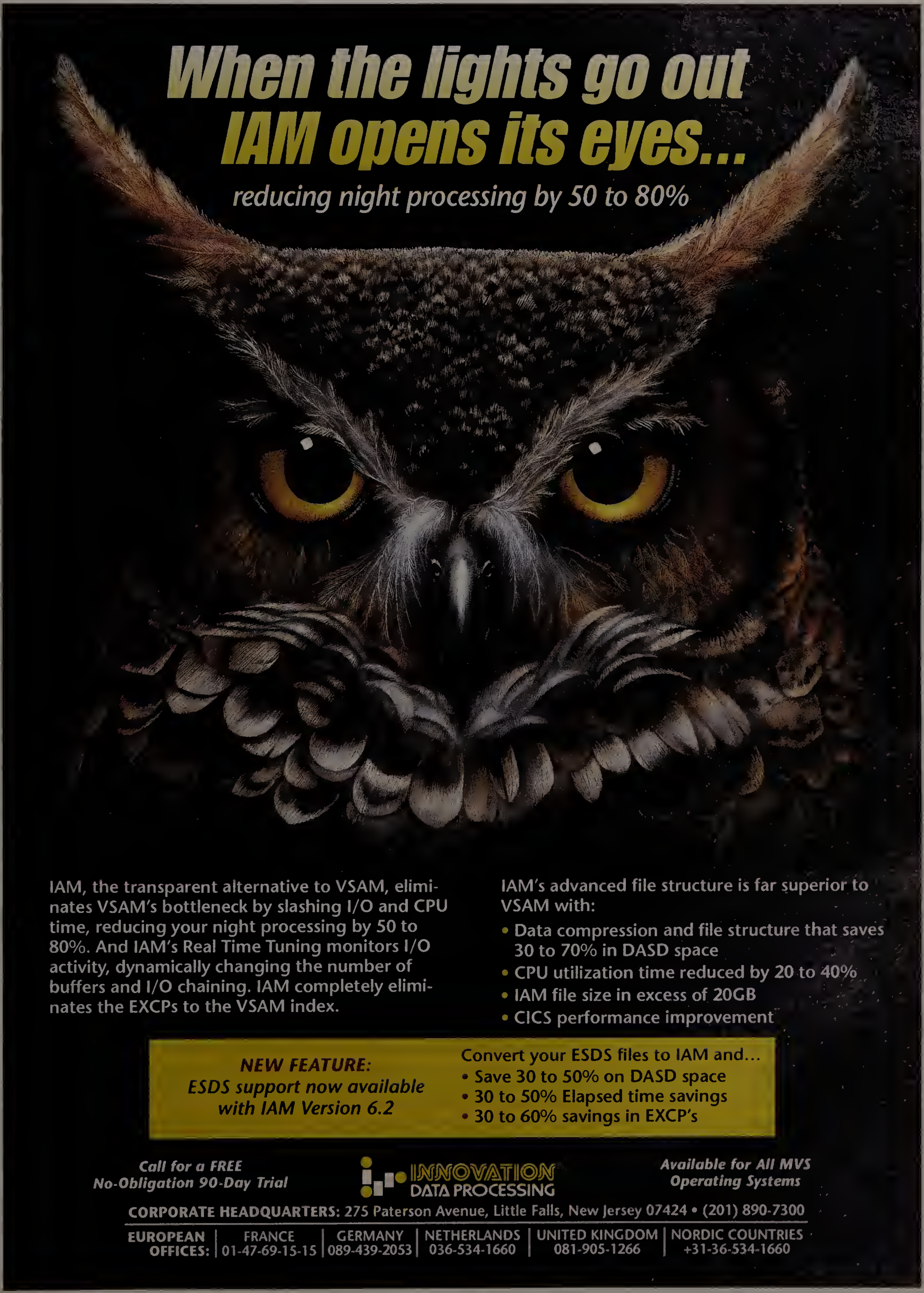
CA's success in capturing IBM would virtually guarantee it the lead in distributed systems management, observers say.

Others aren't so sure a deal is in the offing. "IBM is a tough nut to crack — they don't want to cede their systems management position to anyone," said Charles Phillips, a financial analyst at Morgan Stanley & Co. in New York.

CA Chairman and Chief Executive Officer Charles B. Wang laughed and threw up his arms when asked about the possibility of CA integrating Unicenter with IBM's SystemView package. "IBM never came to me," was all Wang would say.

Officials at IBM declined to comment.

Meanwhile, the CA/Sun alliance is expected to be a boon for users of both vendors' software. "We won't have to have multiple consoles to manage our network anymore, so this fits in pretty well with our plans," said Dave Dubnick, manager of technology operations at Commerce Clearing House, Inc. in Riverwoods, Ill.


When the lights go out
IAM opens its eyes...
reducing night processing by 50 to 80%

IAM, the transparent alternative to VSAM, eliminates VSAM's bottleneck by slashing I/O and CPU time, reducing your night processing by 50 to 80%. And IAM's Real Time Tuning monitors I/O activity, dynamically changing the number of buffers and I/O chaining. IAM completely eliminates the EXCPs to the VSAM index.

IAM's advanced file structure is far superior to VSAM with:

- Data compression and file structure that saves 30 to 70% in DASD space
- CPU utilization time reduced by 20 to 40%
- IAM file size in excess of 20GB
- CICS performance improvement

NEW FEATURE:
ESDS support now available with IAM Version 6.2

Convert your ESDS files to IAM and...
- Save 30 to 50% on DASD space
- 30 to 50% Elapsed time savings
- 30 to 60% savings in EXCP's

Call for a FREE No-Obligation 90-Day Trial

INNOVATION DATA PROCESSING

Available for All MVS Operating Systems

CORPORATE HEADQUARTERS: 275 Paterson Avenue, Little Falls, New Jersey 07424 • (201) 890-7300

EUROPEAN OFFICES:	FRANCE	GERMANY	NETHERLANDS	UNITED KINGDOM	NORDIC COUNTRIES
	01-47-69-15-15	089-439-2053	036-534-1660	081-905-1266	+31-36-534-1660

Remote product offers Powerburst of speed

By Mindy Blodgett

Electronic-mail messages that crawl onto a portable computer's screen and memos that take minutes to send are frustrations of remote users that may be history if a new software package lives up to its promise.

AirSoft, Inc. in Cupertino, Calif., will today announce Powerburst, software that speeds remote connections to levels that ease the pain of leaving the office for mobile workers.

Any kind of remote-node access means a user must make a dial-up connection via a modem or Integrated Services Digital Network (ISDN) link. Such connections have bandwidth and latency issues that make them far slower than in-office LAN connections. AirSoft says it has solved the speed problem by using new caching and algorithims to yield speeds over regular telephone lines that in some cases exceed ISDN or T1/T3 rates.

Powerburst remote-node accelerator software

- Accelerates all file-system-based applications, including E-mail, spreadsheets, file-system databases and schedule managers
- Compatible with all remote-node servers, including those by Shiva, Cisco, Xylogics, Novell and 3Com
- Compatible with Windows 32-bit VXD-based architecture

Better results

While its speed is still less than that of LANs, this type of product will mean a significant increase in performance for mobile and remote workers, users say.

"I honestly think this product will put a big dent in remote-control issues," said David Zbonski, systems engineer and analyst at CNA Insurance in Chicago. "I've been getting performance on such applications as Microsoft Mail of six times faster than before. It's been behaving like an ISDN line."

Powerburst has two components: Powerburst Client, which runs on the remote-node client PC, and Powerburst Agent, a software agent that runs on a dedicated PC on the host LAN.

Jagdeep Singh, president of AirSoft, said Powerburst offers users better performance than they would get using just a faster modem.

"Even if you go from a 14.4K bit/sec. to a 28.8K bit/sec. modem, the increase is only 30%," Singh said. "With Powerburst, you more than double your actual application performance, whether you are using a 14.4 or 28.8 modem."

William Ablondi, an analyst at BIS Strategic Decisions in Norwell, Mass., called Powerburst a "significant" product for mobile users.

"When you have a skinny pipe for connections, you need a more efficient way" to connect from the road, Ablondi said.

Powerburst will ship in September. Pricing will range from $170 per client for a 10-license pack to $60 per client for a 1,000 license pack.

The Powerburst Agent supports up to 64 clients. It can be purchased individually for $995 or in multiple units of up to 25, which cost $498 per Agent.

& **Remote computing is in full swing** at a Florida auto distributor. See page 48.

Mobile computing

Extended nets can count on price relief

By Bob Wallace

Looking to retain their positions as market powers, Xylogics, Inc. and Livingston Enterprises, Inc. introduced remote access products that lower the price of extending corporate networks to small sites.

Users can now expect to pay less than $2,000 for such products, while before prices ranged from $2,500 to $4,500.

Xylogics' Remote Annex 2000 server lets small, far-flung sites and mobile workers dial in to corporate LANs, while sites with an Ethernet LAN can use Livingston's PortMaster Office Router to perform the same task. But technology pioneers Xylogics, in Burlington, Mass., and Livingston, in Pleasanton, Calif., now face a market teeming with competition.

The influx of competitors "is great for users because the price of new products comes down while product functionality keeps going up," said Michael Howard, president of Infonetics Research Corp., a San Jose, Calif., consulting and research firm.

Welcome aboard

Users see products such as the four-port Remote Annex as a means to extend access to central computing resources to the fast-growing number of end users at small offices and home offices. "The initial wave of remote access servers were too large and too expensive to justify," said Maralyn Rosenblatt, a former network manager at Lockheed Corp. in Calabasas, Calif., and now a principal consultant at MIR Enterprises, Inc., a Canoga Park, Calif., consultancy that specializes in telecommunications and multimedia. "Then we saw smaller systems, but they were still expensive. Now, the low-end products are down to an affordable price, but not at the expense of useful features."

Xylogics' four-port Remote Annex 2000 server provides remote and mobile users with access to the corporate LAN using 28.8K bit/sec. dial-up or Integrated Services Digital Network links. The server supports Internet Protocol, Novell, Inc.'s IPX and Apple Computer, Inc.'s AppleTalk protocol.

Livingston's dial-up router has two 28.8K bit/sec. asynchronous dial-up ports that can support data rates of 115.2K bit/sec. using compression. The device supports IP and IPX protocols.

The Xylogics Remote Annex 2000 is shipping now, with prices starting at $1,995. Livingston's PortMaster Office Router is priced at $1,395 and will ship next month.

News Shorts

Oracle serves up Web tools

Oracle Corp. is expected to announce this week a set of development tools and servers for building applications to run on the World Wide Web, company officials confirmed. Oracle is also testing a Web browser that would compete with products from **Netscape Communications Corp.** in Mountain View, Calif., and Naperville, Ill.-based **SpyGlass, Inc.** Oracle signed a joint development deal with SpyGlass just last month. Oracle is undecided about whether it will try to market its browser, officials at the Redwood Shores, Calif., database company said.

DEC offers services for Win 95

Digital Equipment Corp. last week announced a "technology migration service" to help businesses move to Microsoft Corp.'s Windows 95. Digital's program calls for defining hardware and software needs at a company along with training technical staff and end users. The services cost between $150 and $800 per desktop, the company said.

Union Carbide buys into Win 95

Microsoft and **Vanstar Corp.** announced a joint contract last week to implement an enterprisewide network for **Union Carbide**. The project, which will be handled primarily by Vanstar, will entail deploying about 70 Windows NT-based servers as well as Windows 95 on several thousand desktops. The implementation also includes a network operations center and help desk, the companies said.

CA/Legent sets up shop

In the first moves related to its acquisition of **Legent Corp., Computer Associates International, Inc.** announced plans to retain Legent development centers in 14 locations, including the acquiree's Reston, Va., headquarters. CA also announced plans to invest an unspecified amount of money into the further development of Legent products, including AgentWorks, Prevail/XP and DistribuLink. Further, CA has rolled out an offer to retain an unspecified number of Legent employees; that offer includes stock options and other incentives worth up to 130% of the severance the employees would have received were they not offered a position at CA.

HP maintains PC pace

Hewlett-Packard Co. continues to maintain its blistering pace in the global PC business, but **Compaq Computer Corp.** remains king of the hill. According to recent market figures from Dataquest, Inc., HP shipped an estimated 520,000 PCs worldwide in the second quarter, registering a growth rate of 55% in the process — far greater than any of the Top 5 PC vendors. Compaq, meanwhile, closed the quarter with shipments of nearly 1.5 million units, followed by **IBM** with about 1.1 million and **Apple Computer, Inc.** with slightly more than 1 million units.

Sun co-founder resigns

Andreas Bechtolsheim, who designed the first **Sun Microsystems, Inc.** workstation 13 years ago, has resigned from Sun, the Mountain View, Calif., company said last week. Bechtolsheim, 39, a Sun co-founder and the $5.9 billion firm's vice president of technology, will start a networking company called Granite Systems, also in Mountain View, Sun said.

SHORT TAKES **Computervision Corp.** has snared the largest software contract in its history — a $25 million deal with **Airbus Industries**, the European aerospace consortium.... **MCI Communications Corp.** and **News Corp.**, which owns the Delphi Internet service, announced a joint venture to launch an Internet-based on-line service for consumers and businesses. Delphi, MCI Mail, MCI's site on the World Wide Web and MCI's Information Services/Entertainment Co. will be folded together under the venture, which will be headed by MCI's Scott Kurnit.

Boeing Takes Off With The Flying Dutchmen

BOEING 777
777

The Boeing Commercial Airplane Group took off with the 777 this year; they also took off with the Baan Company. About to make a major process redesign commitment, they invited in "The Flying Dutchmen" from Baan Company. The result: Boeing placed an initial order valued at $20 million for Baan's TRITON family of client-server finance, manufacturing, distribution, transportation, service and project management applications.

If you are about to make an ERP decision, Baan's Flying Dutchmen would be delighted to introduce you to a significantly new perspective. One shared by ABB, Hitachi, Mercedes-Benz, Philips, Snap-On Tools and ... oh yes ... by Boeing. The worst that can happen is that you'll get a free hat commemorating Boeing's taking off with Baan. Call Baan at 800-889-9818, ext. 1001. Then clear a landing spot, along with some time on your calendar.

BOEING
Takes Off With
BAAN

BAAN

The Flying Dutchmen

©1995 by Baan Company. All trademarks are acknowledged.

TRBA

Be our guest; automate the rest

Holiday Inn equips sales reps with notebooks to boost room bookings

By Tim Ouellette

One hotel chain is trying to make sure there is no room at the inn.

Holiday Inn Worldwide has just completed a two-year effort to automate its worldwide sales force. The idea was to equip salespeople to proactively sell hotel rooms and conference facilities.

"Our administrative work is eliminated by the system, with processing time cut by a third," said Lynne Cobb, manager of sales administration. Salespeople can now focus more on getting out to see their clients, she said.

In preautomation setup, Holiday Inn "had offices that serviced customers who solicited us," said Michael Coor, vice president and director of worldwide sales at Holiday Inn's headquarters in Atlanta.

The company also had salespeople in London, New York and Hong Kong who worked on the same corporate account and needed to communicate with one another. For example, one salesman said he had to ask an airline how much business it did with Holiday Inn every year because he didn't know.

"Now we have immediate information on room availability and meeting room capabilities," Cobb said. Previously, she would have had to know everything about various properties on her own.

Holiday Inn®

Holiday Inn Worldwide has finished automating its 200-person global sales force and has set these goals for the near future:

- **INCREASE MEETING AND CONVENTION BOOKINGS FROM 35% TO 45%**
- **BETTER MANAGE 700 CONTRACTS WITH AIRLINES FOR FLIGHT CREWS**
- **PROVIDE NETWORK ACCESS TO MULTIMEDIA TOURS OF VARIOUS PROPERTIES**

Salespeople can also go to prospective customers to provide multimedia tours of conference facilities at hotel locations. And when a cancellation occurs, salespeople can rebook everything by reviewing historical information on customers likely to buy rooms or schedule conferences at that time of year.

The hotel chain contracted with Computer Sciences Corp. (CSC) to develop the Global Computer-Aided Selling System (CAS). The software was developed with Powersoft Corp.'s PowerBuilder using a Watcom, Inc. database.

About 100 sales representatives were equipped with IBM ThinkPad 755CE 100-MHz notebooks with Microsoft Corp.'s Office suite, Delrina Corp's WinFax Pro fax software and the CAS client. Each sales office has PCs with similar software and a CAS server.

An upgrade to the CAS software is due by year's end, and Europe will be brought on-line by the end of October via frame relay, said Todd Fryburger, a senior consultant at CSC. Right now, data is being exchanged on a dial-up basis.

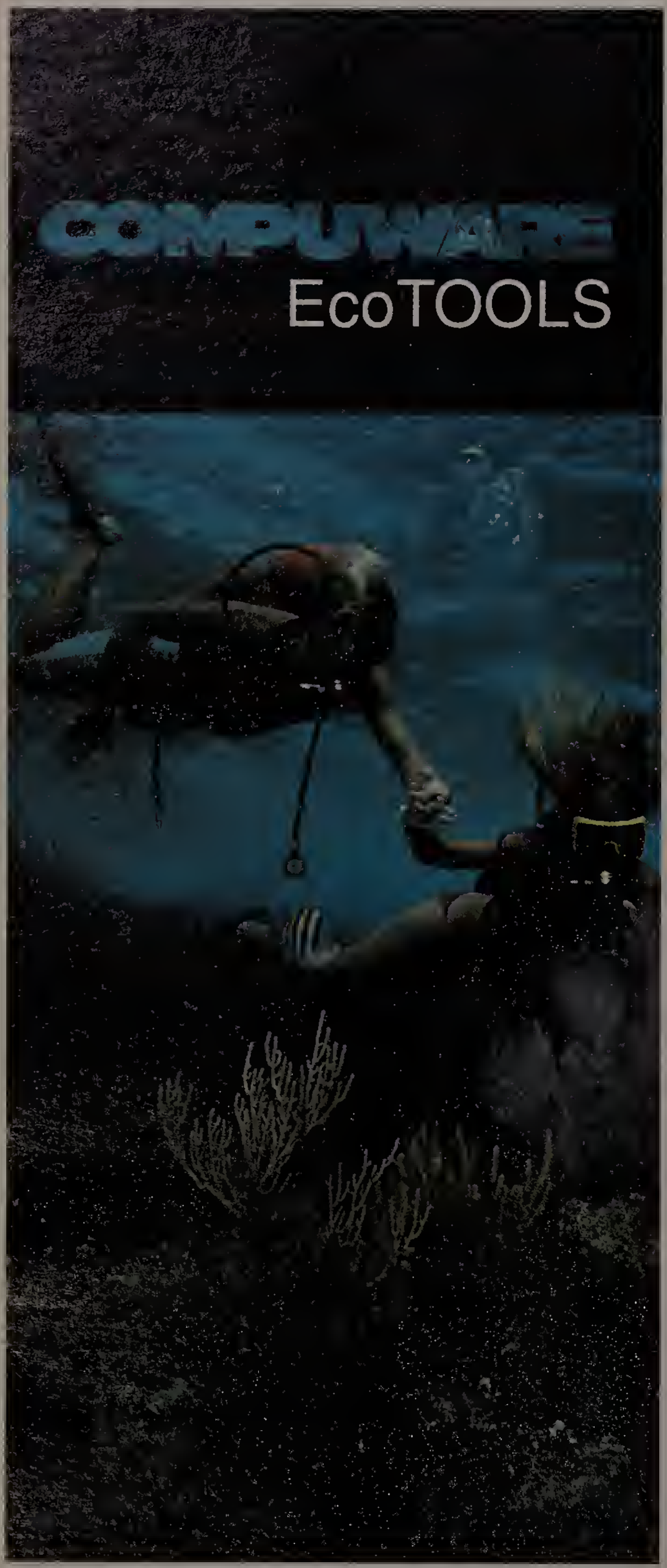
So far, the salepeople are taking full advantage of the new technology.

"It helps them because they can make more informed sales calls and then more money," Coor said. "It took them about a nanosecond to figure that out."

Cobb said sales costs have dropped 3% in the past two years, mainly because more room nights are being sold per salesperson because of CAS.

"The travel industry is much like other industries in equipping their sales force," said James Cammisa, publisher of the newsletter "Travel Industry Indicators." "What is important is the degree to which it can reduce distribution costs, the cost of selling."

Notebooks scale higher heights. See page 37.



COMPUWARE
Uncomplicating Your Life

Keeping client/server environments in balance so your applications don't take a dive.

Compuware EcoTOOLS maintains that critical balance you need for database, network and operating system elements to get along swimmingly across your client/server environment. In fact, Compuware EcoTOOLS is the *only* fully distributed systems-management solution to focus on the sustained well-being of your applications in UNIX, Sybase or Oracle client/server systems.

For example, you can use EcoTOOLS to scan your enterprise for potential problems and then launch EcoPMON to probe deeper beneath the surface than any other product to find the exact cause. You can even monitor executing SQL statements and track the resources used. Then it's a simple matter for EcoTOOLS' other unique capabilities to set thresholds, sound alarms and make the fix. You can easily automate complex preventative measures to keep your client/server environment in equilibrium. And only EcoTOOLS goes overboard to provide advanced, intelligent monitoring and tuning capabilities for you right out of the box. That's what we call a true "buddy system."

For more information about Compuware EcoTOOLS and how we can help keep your operation afloat, call us at 1-800-368-4ECO.

Nobody knows more about keeping client/server environments from going belly up.

EcoTOOLS®

Compuware and EcoTOOLS are trademarks of Compuware Corporation.
All other company or product names are trademarks of their respective owners.
©1995 Compuware Corporation.

Micro Focus® MVS development facilities

Imagine the freedom of having your very own mainframe.

No more expensive TSO cycles. No more waiting to edit, compile, link and test your MVS targeted programs. No more slow system performance.

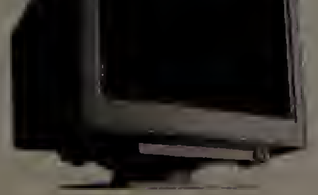
With your own MVS development environment you can use all the tools and utilities you're familiar with: TSO/ISPF panels, SPF Editor, Dialog Manager, IDCAMS, SDSF and more. A system catalog allows you to use your current MVS data set names and run MVS JCL and PROCs. Test online or batch programs with inter-language calling between COBOL, PL/I and Assembler, and access subsystems like IMS, DB2™ and CICS.

MVS Emulation Components:
- MVS JCL Support
- Dialog Manager
- SPF Editor
- System Catalog
- Library Management Facility

What's the catch? Your very own mainframe looks a lot like a PC. A PC with Micro Focus MVS development facilities. It emulates a subset of MVS on OS/2 to give you an easier transition to desktop computing with increased productivity, better quality programs and will likely save you a few-hundred thousand dollars a year. Now, isn't that a great testimonial for freedom?

See for yourself.

Contact Micro Focus at 1-800 MFCOBOL Ext. 1202, In Canada: 800-465-1234 Ext. 686, and ask for your demo of the Micro Focus MVS development facilities.



A Better Way of Programming™ **MICRO FOCUS**®

Micro Focus is a registered trademark and "A Better Way of Programming" is a trademark of Micro Focus Ltd. DB2 is a trademark of IBM Corporation. Photo: Carl Yarbrough

TCP/IP to extend reach into homes, businesses

By Patrick Dryden
SAN JOSE, CALIF.

Beyond its role as a transport protocol, TCP/IP is laying the foundation for a ubiquitous global network that will extend its reach into corporations and homes, technologists forecast here last week at the first TCP/IP Expo conference.

The protocol that made its debut back when The Grateful Dead first hit the road now lets millions of users tap global resources through the Internet. Traditional TCP/IP file, print, terminal emulation and messaging functions will increasingly augment established networks, industry observers said.

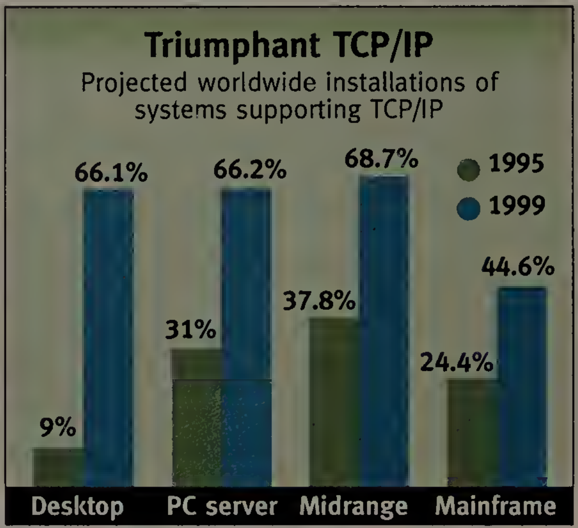
Microsoft Corp.'s Windows 95 will include TCP/IP support, and high hopes for Internet browser software stimulated the feeding frenzy in last week's initial public stock offering by Netscape Communications Corp. (see Briefs, page 32).

"With the endorsement of basically all operating system vendors, the future of TCP/IP is bright," said Rick Villars, an analyst at International Data Corp. "TCP/IP is penetrating the corporate world, the mobile world and the home."

Some clouds dim the bright future, however.

TCP/IP is desirable for its openness — it is a multiuse environment built on international standards — but it still struggles in its infancy to keep up with corporate network demands, said Geoffrey James, an information systems specialist at Lever Brothers Co. in New York.

"It's unsettling that home users pushing Internet access bring more changes to our environment," James said. "My biggest concern is security: IP communication is in the clear so that anything and everything can communicate, so I need encryption before I support business functions."



Triumphant TCP/IP
Projected worldwide installations of systems supporting TCP/IP

Source: International Data Corp., Framingham, Mass.

Punch list

Other problems addressed at the expo included the shortage of address space, mobile and remote client support and management issues. "As we get to the stage where 50% of the world is talking TCP/IP, the usage level causes quite a strain," Villars noted.

The foundation appears to be firm and growing firmer.

In three years, the reference point will be applications based on Windows socket extensions and not the underlying protocol, Villars said.

WinSock, a common interface enabling TCP/IP applications-like browsers and electronic mail to run from Windows, was demonstrated here in its current and extended forms. Version 2 of WinSock, due early next year, will adapt popular TCP/IP applications to other network transports, new media and 32-bit performance.

"We're bringing developers the intelligence to enable a vast array of multimedia applications to run on any network," said Martin Hall, chairman of the Windows Sockets Group. Intel Corp. and Microsoft are preparing the software developer's kit for release this fall, he said.

Many standards committees are laboring to help TCP/IP applications recognize and adjust to slow dial-up and wireless connections, which are required to fuel the spread of mobile systems, said Evan Kaplan, business development director at Walker Richer & Quinn, a Seattle-based vendor of enterprise connectivity software.

Kaplan said the protocol stacks themselves are getting smarter — to cache needed data and adapt to timeouts of cellular connections, for example.

Tools, not toys

As the wholesale hyping of the Internet escalates, an entire conference and exposition devoted to its core communications protocol was inevitable.

The smattering of attendees at TCP/IP Expo in San Jose, Calif.. gained some insight into TCP/IP migration from legacy IBM SNA and Digital Equipment Corp. DECnet environments. They also learned the current status of myriad standards behind an array of acronyms and heard promises that open networks can exist.

But information technology managers demanded more help. They must make their dreams come true with dwindling budgets, staff, time and expertise in the face of rising expectations, complexity and standards.

"Businesspeople want tools that do the job, not techie toys to play with," said Geoffrey James, an IS specialist at Lever Brothers. "I need idiot-proof applications talking to idiot-proof applications so that I don't get problem calls into the night."

The product lineup at the show touched on all aspects of enterprise networks, with an emphasis on PC clients. Offerings included the following:

- **SunSoft, Inc.** touted SolarNet WebScout, due next month at $145 per user, as the cheapest corporate kit for Internet access via both LANs and remote dial-up connections. The software groups together services such as Netscape's World Wide Web browser and traditional Internet applications. SolarNet WebScout supports Windows 95 and Windows PCs.
- **CompuServe, Inc.** introduced Internet Office Web Server, software that supports two of the many security standards — Secure Hypertext Transfer Protocol and Secure Sockets Layer. The server was designed for commercial transactions over the Internet. Versions for several Unix platforms and Windows NT should ship this fall for $599.
- **Apertus Technologies, Inc.** launched Express TN3270, graphical terminal emulation software that enables various Unix workstations to access mainframe and IBM AS/400 systems. The Eden Prairie, Minn., vendor offers it now for $595.

—Patrick Dryden

Microsoft rides E-mail trail with Wang, DEC

Deals bring Exchange into user sites

By Suruchi Mohan

Microsoft Corp. is riding into the host-based electronic-mail market escorted by Wang Laboratories, Inc. and Digital Equipment Corp., thanks to agreements announced in the past two weeks. But the smart money is betting that Microsoft will try to overtake its companions sometime soon.

E-mail systems

Under a deal made public last week, Microsoft and Wang will jointly develop a gateway to enable communication between Exchange and VS Office, Microsoft's and Wang's respective E-mail systems. Additionally, Wang will provide support services so would-be Exchange users can coexist with and transition from VS Office to Exchange.

This agreement came a week after Microsoft made a similar coexistence and transition announcement with Digital.

Although the technical details are sorely lacking, most industry watchers agreed that Microsoft is likely to use the agreements to enter the enterprisewide E-mail market and phase Digital and Wang out.

Microsoft products are already under evaluation at some Wang and Digital shops. "The Wang system is a very viable system; can't say the same for Microsoft Mail. Yet we're leaving VS Office to go to Exchange," said Frank Zito, assistant vice president of operating systems at National Westminster Bank in Melville, N.Y. Exchange's lure lies in its graphical user interface, ability to add attachments, and drag-and-drop documents — features VS Office doesn't offer.

"DEC has a long, proven track record as an enterprise E-mail provider," said Betsy Ramsey, a senior systems programmer at The Catholic University of America in Washington, which uses VaxMail. "But I have to wonder about the future of the product."

> **"Microsoft would like to see a transition to Microsoft Exchange take place as quickly as possible. It is likely that Wang and DEC would like the transition to happen at a slower, more reasonable pace."**
> **—Tim Sloane, Aberdeen Group**

What's at stake

Wang has a lot to gain from its new alliance because it is positioning itself as a large Microsoft support center, said Scott McCready, an analyst at International Data Corp. in Framingham, Mass. Wang can also offer value-added features such as imaging, workflow and document management.

Digital's story is different because it still has "software products in the arsenal that could be competitors to [Exchange]," McCready added. "Customers will get a confused message: 'Should I go with Digital or [Microsoft]?' DEC is retiring its installed base to Exchange."

Not true, said Digital's Signe Maximous, enterprise groupware marketing manager in Alpharetta, Ga. "Microsoft has an alliance. [It is not out to] undo us," she said.

Maybe not in the short term. But Microsoft's Greg Lobdell, group product manager in Redmond, Wash., acknowledged that penetrating the larger companies with Exchange is an important goal. And Microsoft is using Digital, Wang and IBM in that effort. For example, it is giving IBM Professional Office System users a gateway to communicate with Exchange, even though it doesn't have an actual deal with IBM.

OS/2
Windows
NetWare
Windows NT
Windows®95
Watcom SQL
Watcom SQL

A Database Server Should Expand Your Horizons, Not Your Budget.

Presenting Watcom SQL, the industrial strength database server for simple and affordable widespread deployment of PC client/server applications. Watcom SQL's advanced technology offers unparalleled simplicity of operation and performance, making it ideal for workgroup, desktop and mobile applications — from headquarter's departments to remote branch offices to mobile field personnel on the go.

Installed and Running in Minutes. Setting up Watcom SQL is quick and easy, taking only a few minutes. But for real convenience, many users build it right in to the installation process of their applications. Imagine, real SQL database deployment so easy that end-users don't even know it's there!

High Performance Right Out of the Box. The self-tuning query optimizer is the key to Watcom SQL's blazing performance. Not only does it tune each individual query, it delivers high speed performance without administrator attention. Better still, it comes as standard equipment in every box.

Big Performance. Small Footprint. Not only is Watcom SQL powerful, it's incredibly efficient as well. Because it was designed for PC environments, it minimizes its use of disk and memory — just 4 MB of disk and less than 1 MB of memory. And Watcom SQL also runs quite comfortably on the same machine as an application — particularly important in mobile, standalone and peer-to-peer networks. Of course, on advanced servers, Watcom SQL shines by taking full advantage of both increased memory and RAID storage.

Yes, The Price Really is That Low. Watcom SQL is priced to make widespread deployment affordable. A 6-user server is only $795*. And for volume deployments, our "Gold Disk" licenses offer significant savings.

So, though your budget may not be limitless, your horizons are with Watcom SQL — from one server to thousands on Windows, Windows®95, Windows NT, NetWare or OS/2. With hundreds of thousands of servers already installed, Watcom SQL is the proven choice for widespread, industrial strength deployment.

Expand your horizons. Call us today for the opportunity to try Watcom SQL 4.0 free for 30 days, or to reserve your seat at a free half day seminar on *"Cost-effective Widespread Deployment of Client/Server Solutions"* in a city near you.

1-800-265-4555

Powersoft
Watcom Products Division

Powersoft, Watcom Products Division 415 Phillip Street, Waterloo, Ontario, Canada N2L 3X2 Telephone (519) 886-3700 Fax (519) 747-4971 Watcom and the Lightning Device are trademarks of Watcom International Corporation. Powersoft is a trademark of Powersoft Corporation Other trademarks are the properties of their respective owners. ©Copyright 1995 Powersoft Corporation. *Prices in US dollars.

Operating systems

Mac faithful keep wary eye on Windows 95

By Lisa Picarille

The unifying battle cry of Macintosh users against Microsoft Corp.'s Windows 95 seems to be "the Mac already has that."

"Windows 3.1 was clunky and awkward and now with Win 95 they are finally adding things like long file names, a trash can and built-in sound support. Well, the Mac has had all that and more since 1987," said Norman Dlugatch, a scoring engineer at Paramount Pictures Post Productions Sound Facilities in Hollywood, Calif. The company has thousands of PCs and only 40 Macintoshes.

So it went at last week's Macworld Expo in Boston, where most Mac boosters pooh-poohed the onset of Windows 95, which is due in stores Aug. 24.

"Cosmetically [Windows 95] may look like a Mac, but just because something has a graphical user interface doesn't make it a Mac," said Charles Merenda, director of student support service at Chesapeake College in Wye Mills, Md.

No room for Win 95

Others in Apple Computer, Inc.'s core markets, such as publishing and prepress printing, also said they weren't concerned about Windows 95.

"We have both Macs and PCs at our company. But the Mac is so deeply rooted in desktop graphics and the print industry that it is really the standard, and there is no way it will be pushed out for Windows 95," said Christopher Candela, operations manager at Impressions, a Roslyn Heights, N.Y., marketing and sales promotion agency.

However, some users expressed concern that the timing of Windows 95 could hurt Apple. Copland, the next-generation Macintosh operating system, is not due until the second half of 1996.

"A year is long time to wait for Copland. That could hurt Apple in the long run," said an information systems director at a Midwestern military facility, who wished to remain anonymous.

No hurry

But Kevin Kelly, a computer education specialist at the Plymouth Public Schools in Plymouth, Mass., said not everyone is so quick to adopt new technology. The school system has more than 700 PCs and 100 older Macintoshes.

The school district recently installed DOS 3.1, and Kelly said it won't move to Windows 95 for another one to two years. One issue is price, and another is the lack of Windows 95-compatible software. "Now that Mac pricing has come down and they have a new openness that lets them be compatible with other systems, we think Macs might be a very good choice," as the district continues to shop around for new machines, he said.

Point, counterpoint

"We are waiting for the Fidelities and the Gillettes of the world to prove to us that Win 95 works. Then we will do it," said Kevin Kelly, a computer education specialist at the Plymouth Public Schools system in Plymouth, Mass., which has more than 700 PCs and 100 older Macintoshes.

"Windows 95 will have no impact on our company at all," said Christopher Candela, operations manager at Impressions, a Roslyn Heights, N.Y., marketing and sales promotion agency.

Visual Basic tool debuts

PowerBuilder is targeted

By Elizabeth Heichler

Microsoft Corp. has finally unveiled the mass-market tool it hopes will be the cornerstone of application development for Windows 95. The new version of Visual Basic was demonstrated openly for the first time last week at the Borland Developers Conference in San Diego. It is the company's bid to move into the enterprise-strength class.

Visual Basic 4.0 brings the visual development environment used by as many as 2 million people into the 32-bit world. It also has enhanced capabilities for developing client/server database and multitier applications.

Visual programming

Expectations for the product have heightened since it was originally expected to ship earlier this year but was delayed along with Windows 95. Microsoft said more features were added in the interim.

The company is aiming Visual Basic 4.0 at corporate client/server developers and looking to dethrone Powersoft Corp.'s PowerBuilder. But users of both products complain of hitting the scalability wall, a problem that both vendors are trying to overcome in new releases.

The public will see Visual Basic 4.0 for the first time on Sept. 12 during Microsoft Developer Days. The company will host open houses in about a dozen North American cities, London and Melbourne, Australia.

The most comprehensive of the three editions of Visual Basic being released (see box) is the Enterprise Edition, which features remote procedure calls (RPC) technology. This technology allows parts of applications to be deployed on a Microsoft Windows NT server.

Visual Basic 4.0 "is a solid upgrade over the current release of Visual Basic, but I don't think it's a quantum leap into a new class of tool," said Brent Williams, an analyst at Gartner Group, Inc. in Stamford, Conn. He called the RPC support "a human interest story, not industrial strength," but he praised the strength of support for the Microsoft OLE architecture. This will let developers assemble applications using pre-existing building blocks of code — components called OLE controls.

Beta user Scott Hillier at New Technology Solutions, Inc. in North Haven, Conn., has been pleased with the ability to easily build OLE automation servers. These can be used to create business rules or objects that are called by other applications. Previously, Visual Basic could run only as an OLE client. Now it can run as OLE client and OLE server, he said.

Beta user Richard Chase, a developer at Framingham, Mass.-based Professional Development Group, Inc., said, "I'm not impressed by it." He uses Borland International, Inc.'s Delphi tool after "running into brick walls using [Visual Basic] and PowerBuilder." Chase said Visual Basic 4.0 lacks object-oriented capabilities.

New edition

Visual Basic 4.0 will be available in the following three editions:

- **Standard Edition,** 32-bit (for hobbyists and students): $99.
- **Professional Edition,** 32-bit and 16-bit: $499.
- **Enterprise Edition,** 32-bit and 16-bit: $999.

As expected, Microsoft has integrated into Visual Basic 4.0 the SourceSafe tool set for managing code and version control.

Bank checks out IBM imaging

By Tim Ouellette

Chemical Banking Co. wrote a big check to IBM last week to image-enable the New York bank's check processing operations.

As part of a $50 million, five-year contract, IBM will create an image archive of processed checks and help Chemical prepare customized statements for corporate customers.

But that's just the tip of the iceberg for Chemical, which is using imaging to anchor itself for broader re-engineering.

"We did not start with the vendor selling us an imaging solution," said Tom Vicknair, project manager for check processing for all Chemical operations at Texas Commerce Bank, a Chemical Bank subsidiary. "We started with a project to completely re-engineer check services."

With the archiving of check images, most of the 9 million checks the company processes each day will be electronically scanned.

The project is also a step toward enhanced statement options for corporate customers, including delivery of statements via diskette or CD-ROM and secure on-line access to images of a company's transactions.

IBM's High Performance Transaction System imaging system, which is based on IBM's ImagePlus imaging software, will form the technology base.

Chemical will tackle proof of deposit, which David Medeiros, technical analyst at The Tower Group in Wellesley, Mass., called a more high-risk application with a high potential for cost savings. The costs and number of sorters required for proofs of deposit make the process consume the lion's share of check processing.

BLANK CHECK FOR IMAGING

1001

Chemical Bank is re-engineering its check processing operations with IBM imaging

- A check is "touched" 12 times now; future operations will require workers to handle checks only twice.

$

Dollars

- Handwriting recognition software is expected to recognize the value of half of the checks in the process.

For

- It takes two days to get a customer a copy of a check from microfilm now; down the road, the imaging system will let customers access copies of their checks without manual intervention.

Workflow also spreads to lower-end installations. See page 63.

Bonanza time

CONTINUED FROM COVER 1

no obligation to buy anything, according to Cabletron President Bob Levine.

- Buyback incentives of up to 40% for customers who trade in their Chipcom and 3Com products. The amount of the rebate will be based on the age of the product and "the business potential of the site," Levine said.
- Free on-site consulting for potential customers. Cabletron design engineers will examine a potential customer's current network setup, analyze network bottlenecks and limitations and help the customer design a network that includes management equipment.

Playing take-away

Cabletron will offer free Spectrum network management modules for the following products if users migrate to Cabletron equipment in the next 12 months

3Com devices manageable from Spectrum:

- NetBuilder II, high-end router
- LinkBuilder 3rd Generation Hub, high-end hub
- Flexible Media Stack (FMS), stackable hub
- FMS 2
- Multiservices Hub, stackable hub
- LANPlex 5000 and 6000 LAN, switches

Chipcom devices manageable from Spectrum:

- ONcore Switching System, high-end switching hub
- ONline System Concentrator, midrange switching hub
- ONsemble, stackable hub (Ethernet and Token Ring)

- Free Spectrum network management modules — valued at $6,000 — to manage Chipcom and 3Com hubs, bridges and routers. The offer will be aimed at users who don't want to toss out their current internetworking devices but want to manage them with Spectrum — giving Cabletron a foot in the door.
- A 90-day money-back guarantee that lets users test Cabletron equipment, technical support and management software at their sites before they trade in any of their 3Com/Chipcom gear.

Old standby

Cabletron's incentive plan for Chipcom and 3Com customers mirrors a program the company initiated to lure SynOptics and Wellfleet users in the wake of the Bay merger. The 1994 buyback netted $100 million in new sales.

Users can take advantage of any or all of the incentives or choose a combination package any time in the next 12 months. And some users will be quick to try out the Cabletron incentives, such as one large Chipcom Galactica user in the Southeast.

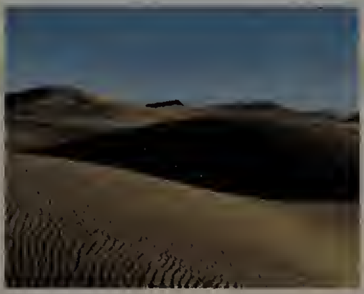
"The incentives sound great, and I'm under no obligation to buy, so I'd be stupid if I didn't at least look at the Cabletron products," said the user, who requested anonymity. "I've really liked the Galactica hub and don't want 3Com's LANPlex. So I'm not going to sit around and wait until it's no longer supported before I make new plans."

James Harrison, a network engineer at Alcoa Fujikura Ltd., an automotive electronic distribution systems manufacturer in Brentwood, Tenn., said his firm was planning to standardize on Cabletron equipment even before it got word of the incentive plan.

Alcoa Fujikura recently acquired smaller rival Electro Wire Corp. in Dearborn, Mich., which uses Chipcom and Cabletron devices. Alcoa now plans to standardize the company on Cabletron switching hubs.

"The folks at Electro Wire liked their Chipcom hubs, but frankly we feel Cabletron offers better performance, reliability and superior service and support," Harrison said. "The new incentives are just icing on the cake."

Levine said he will add "whipped cream and will put my money where my mouth is to grab as much business as we can from 3Com and Chipcom." The Cabletron chief executive officer estimated that the incentive program could attract 500 to 1,000 new customers in the next six months, adding $25 million to $50 million in revenue.



Once you **venture** into **client/server,** there's no turning back. So you

might as well
enjoy
the ride.

You already know where you want to go with client/server. But do you know exactly how you're going to get there?

Fortunately, there are plenty of companies that can tell you.

Venturing
further
into
client/
server

*Call 1-800-499-SEER to learn how others used Seer*HPS for a successful journey through client/server.*

Such as the multi-billion dollar bank, handling as many as 120,000 calls a day, that completely reconfigured its customer service operations. The giant retailing conglomerate that totally reengineered its customer database infrastructure for 500 stores. The information systems developer that integrated a central government's wage and tax system into its accounting and purchasing systems.

All had ambitious business plans, a large number of end users, and an urgent need to support rapidly-changing business processes.

All chose Seer*HPS to develop client/server solutions across their enterprise.

And all found their journey into client/server to be challenging yet extremely rewarding. Mainly because they had the ideal traveling companion. Seer.

SEER®
We've been there.

Commotion over Microsoft's Registration Wizard continues

By Laura DiDio

The hoopla surrounding the Registration Wizard in Windows 95 refuses to die.

Consumer activist Ralph Nader is the latest person to join the fray. Two weeks ago, he sent a letter to President Clinton and then distributed it on the Internet. He characterized the software as "intrusive" and asked the President to urge federal agencies not to purchase Windows 95 with the Registration Wizard.

The Wizard is an electronic version of Microsoft Corp.'s standard paper registration card. This type of software is nothing new and, in fact, many companies routinely embed registration components into their software.

With the Registration Wizard, users are given several prompts (see chart at right). At each step, they have the option of registering or declining to register desktop and network hardware and software with Microsoft, said Mike Conte, the company's group manager for Windows 95.

Additionally, network administrators have the ability to disable or remove the Wizard, Conte added.

The controversy first erupted last spring when the Registration Wizard became the topic of heated debate among Windows 95 beta users on The Microsoft Network. Some users argued it was a gross invasion of privacy, while others such as Doug Archell, an independent consultant in Toronto, were nonplussed.

"It doesn't personally bother or worry me. Things like this happen all the time," Archell said. "There's very little privacy left to individuals these days; it's just a matter of how paranoid you're going to be about it."

Conte said the issue has been blown out of proportion. "The Registration Wizard was meant to be a convenience. It gives us more accurate information that's easier for users to fill out and Microsoft to process," he said.

Consumer activist Ralph Nader *asked President Clinton to urge federal agencies to boycott Windows 95 because the Registration Wizard has the potential to invade customer privacy*

Strong opposition

That stance is "disingenuous" charged Nader and James Love, who work together at the Center for Responsive Law in Washington and its affiliated Consumer Project on Technology.

In their July 31 letter to President Clinton Nader and Love wrote that the Registration Wizard "is an intrusive measure that uses technology to erode customer privacy, and we urge you to take steps to discourage its use. . . ."

Contacted last week, Nader and Love said the "government should discourage the private sector from collecting big database on private citizens. In Europe, [the collection of information] is much more tightly regulated. Collecting information at the point of registration does pose a threat to privacy."

The two consumer advocates commended Microsoft for giving users a choice in using the Registration Wizard or declining to send their desktop hardware and software data on to Microsoft. Still, Nader and Love take umbrage with the company getting hold of such an extensive amount of information about what rival products its customers are using.

"There are less intrusive and more effective ways to collect data. We believe Microsoft uses the Wizard principally for marketing purposes and gathering intelligence on their rivals," Love said.

It only takes about a minute to try out Microsoft's Registration Wizard. Here's how:

Click on the **START** button.

At the **START** menu, click on **RUN.**

Type **WELCOME** on the open line and click **OK.**

Follow the prompts or just hit **NEXT** until it displays the inventory of what's on the machine. Note that at the bottom of the screen, where you're asked to input your name and address, you are also asked if you want to opt out of third-party mailings.

At the inventory display screen, if you don't choose **YES** or **NO** for "Include System Inventory with Registration" at the bottom of the screen, a large dialog box comes up to inform you that you have to choose **YES** or **NO** to continue.

Microsoft Net

CONTINUED FROM COVER 1

work service last week (see chart, page 54).

In the long run, it may turn out that what Microsoft Chairman Bill Gates has been saying in recent months is true: MSN's real competition is not other on-line services but the Internet. Indeed, the explosive success of Netscape Communications Corp.'s initial public stock offering last week seems to bear that out.

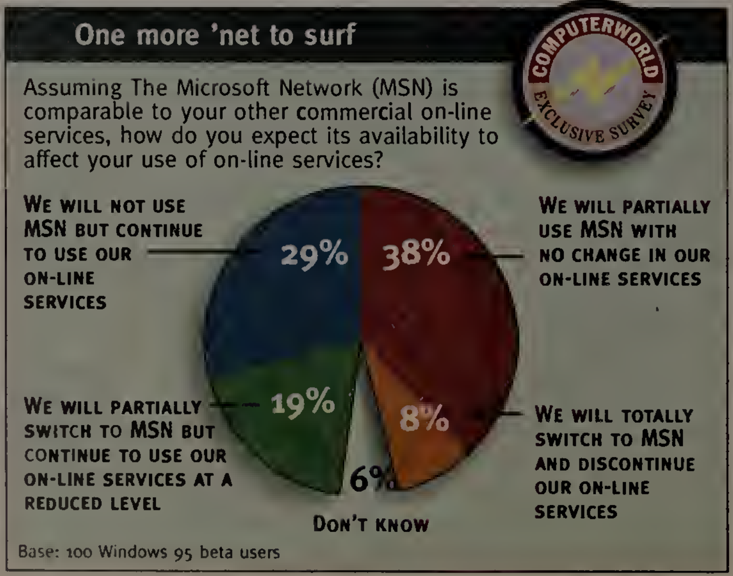
Business uses

Consider the Ericsson Radio Systems unit of Ericsson, Inc. in Richardson, Texas, and Pacific Enterprises Corp., the parent company of Southern California Gas Co. in Los Angeles. Both companies use the Internet for business purposes such as exchanging electronic mail and obtaining technical help and software patches from vendors. Both companies are also Windows 95 beta sites.

"I can get everything I need by going to Microsoft's home page and their [file transfer protocol] server on the Internet," said Tom Harrington, business systems manager at Ericsson Radio Systems. "I no longer subscribe to any on-line services—just to an Internet provider."

Bill Carrigan, technology adviser at Pacific Enterprises, said his company uses the Internet but also includes a mix of major on-line service providers. "We have no formal plans to introduce MSN into the mix, but we don't intend to limit [access to it] either," Carrigan said.

In fact, a Microsoft official acknowledged that at least for now, there will be few compelling reasons for business users to show much interest in MSN.



One more 'net to surf

Assuming The Microsoft Network (MSN) is comparable to your other commercial on-line services, how do you expect its availability to affect your use of on-line services?

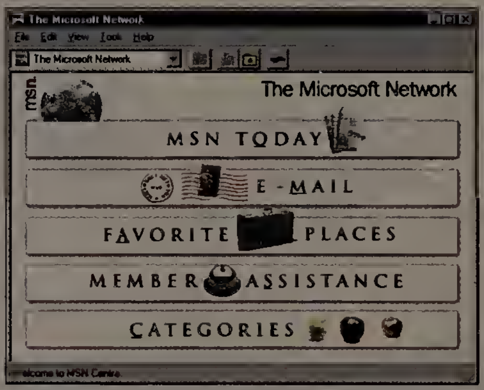
Base: 100 Windows 95 beta users

On hold

Aside from technical forums hosted by Microsoft, Lotus Development Corp. and a large number of other hardware and software vendors, Microsoft doesn't plan to announce business-oriented services soon, said Diana Murray, group manager for MSN.

Jeffrey Kagan, president of Kagan Telecom Associates in Atlanta, said business users will be more convinced by rich features and ease of use than by low prices when they choose among the competing services — a reality that may favor the more mature services.

"The whole idea that people sign up for the first thing they see and pay for it month after month is not credible," said Kathey Hale, a senior analyst at Dataquest, Inc. in San Jose, Calif. A recent Dataquest report predicts that Microsoft might only attract 1.8 million users by the end of next year, fewer than any of its commercial competitors.



The Microsoft Network *won't announce business-oriented services anytime soon, the company said*

That hardly consoles the other services, however.

"I don't expect [Microsoft] to get it right the first time, [but eventually] they're going to get it right and then the bundling [advantage] kicks in," said Brian Ek, vice president of public affairs at Prodigy Services Co. in White Plains, N.Y.

Yet in the long term, the introduction of MSN may turn out to be beneficial to all on-line services and users.

"This will rise the tide, which will raise all ships," said Neal M. Goldsmith, president of Tribeca Research, Inc., a New York-based research and consulting firm.

51 Issues for $~~48~~ $39.95

☐ **Yes**, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of $39.95* per year - a savings of $8.05 off the basic subscription price.

COMPUTERWORLD

Vaporware tactics elicit mixed views

Reality check

Full benefit of Plug and Play technology is two years away

IS taps temp execs

IBM/Cisco deal to ease legacy moves

Client/server software heads for MVS territory

First Name MI Last Name

Title

Company

Address

City State Zip

Address shown: ☐ Home ☐ Business ☐ New ☐ Renewal

Basic Rate: $48 per year. * U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

For faster service, fax your order to (508) 626-2705.

E2H5-X

Recycled Paper

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 1131 FRAMINGHAM, MA

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
CIRCULATION DEPT
375 COCHITUATE ROAD
FRAMINGHAM MA 01701-9494

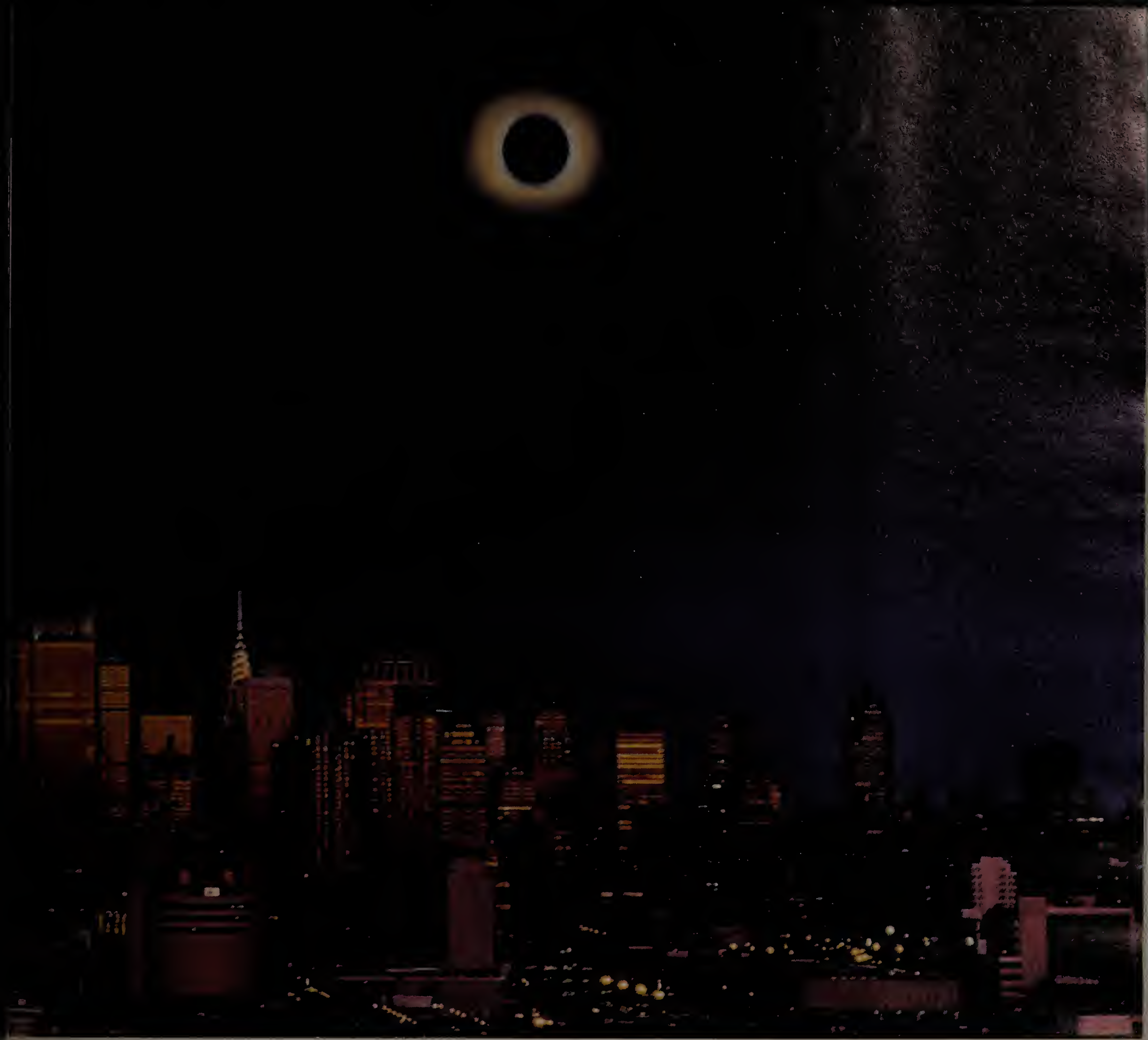
Network here is all set to help you make money on the Internet.
Network

At Sun, we think one of the jobs of your new, more helpful computer network is to help you make money. And we have a complete set of products and services that let you use the Internet to do just that. We start by giving you quick and painless access to the Internet. Once you're connected, we'll enable you to conduct commerce in a way that's completely secure for both you and your customers. Thanks in part to one of the most advanced security products ever made available—our SunScreen™ solution. We can also set you up with our breakthrough, graphics-intensive HotJava™ browser, which lets you interact in real time with customers, with live financial information, and more—right on the Internet. Like we said, it's all about helping you make money. To learn more about network computing, please contact the company that invented it. Sun. At http://www.sun.com or 1-800-786-0785, Ext. 255.

Sun
THE NETWORK IS THE COMPUTER™

© 1995 Sun Microsystems, Inc. All rights reserved. Sun, Sun Microsystems, the Sun Logo, SunScreen, HotJava and The Network Is The Computer are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries.

Great Things Can Happen When



Two Strong Forces Come Together.

Sometimes one plus one really does equal three.

LEGENT® And that's precisely why Legent and CA make such an irresistible combination.

Together, we'll be able to give all of our clients new products and services that would have taken us many years to develop separately. By combining our product lines, we'll offer clients much more comprehensive and effective solutions. With enhanced worldwide service and support that no other company can match. In short, it's a win-win-win-win situation. That's what happens when you always put your clients first.

And when two of the world's leading software companies join forces.

For more information, call 1-800-934-4321. Or visit http://www.cai.com.

COMPUTER® ASSOCIATES
Software superior by design.

© 1995 Computer Associates International, Inc., Islandia, NY 11788-7000. All other product names referenced herein are trademarks of their respective companies.

Borland developers keep the faith

By Elizabeth Heichler
SAN DIEGO

Borland International, Inc.'s message that it has gotten its financial house in order and will be a stable supplier of development tools won cautious approval from attendees at the company's annual development conference here last week.

Borland demonstrated that it has hitched its wagon to the Microsoft Corp. Windows 95 star by previewing versions of its product that will target developers migrating to the 32-bit world.

Developers appear eager to take advantage of the power and productivity they may gain in a 32-bit world — but more for their own comfort than for developing 32-bit applications.

"I'm interested in Delphi 32 but just to get to a 32-bit platform," said Dean Uhlman, a systems specialist at the Johnson County, Kan., office of information technology services. "I don't see a lot of our users moving to Windows 95 for another 18 to 24 months."

Borland seems to have "gotten its feet back on the ground," Uhlman said. He said he was relieved that rumors of Borland's acquisition by Novell, Inc. have apparently fizzled. He also said he would prefer to see Borland remain an independent company.

That sentiment was shared by other developers attending the show, many of whom sought information about the Delphi visual development tool introduced in February.

For some, confidence in Delphi runs even higher than their confidence in Borland.

"The financial situation hasn't been that big an issue for us. The Delphi environment is so extensible, someone is going to support it," said Richard Chase, a developer at Professional Development Group, Inc., a training firm in Framingham, Mass.

"There's no question Borland is looking more stable," said industry analyst Chris Le Tocq, president of SoftTracks Software Research in Los Altos, Calif.

One, two, three

Borland President Gary Wetsel says the company has made the following cutbacks: It cut staff from 1,650 worldwide to less than 1,000, saving $9 million each quarter; it reduced marketing and advertising spending by focusing on developers, saving $6 million to $8 million each quarter; and it closed nine international offices while retaining distributorships in the affected areas.

Ahead of the game

Borland is also well positioned to take advantage of the industry transition to Windows 95, especially with the 32-bit version of Delphi that it previewed at the conference, LeTocq added.

Prerelease copies of Delphi 32 will be available within weeks through Borland's Connections program. The visual development tool will be generally available within 90 days of Windows 95's Aug. 24 release, according to the company.

Delphi 32 features a compiler that Borland says runs three to four times faster than the 16-bit version, enhanced database connectivity and a Database Explorer that allows developers to work with metadata (information about the data).

Meanwhile, Borland also disclosed that the next major release of Borland C++, Version 5.0, will be a native 32-bit development environment for Windows 95. But it will continue to support 16-bit development.

& **Object request brokers** are moving forward. See page 64.

Because of VMARK, a lot of kids
will start their school day safer.

SCHOOL BUS
INTERNATIONAL
48304

Each day, over a million people are using applications developed with VMARK products to do everything from fleet maintenance to retail point of sale to inventory management. That's because uniVerse™, our advanced RDBMS, offers superior price/performance for line-of-business applications.

Our product family also includes HyperSTAR™, the industry's only object-messaging middleware which dramatically reduces the cost and complexity of enterprise data access without resorting to gateways, and Object Studio™, the most comprehensive object-oriented design and development environment for client/server application deployment.

Best of all, our products are supported around the globe, 24-hours a day, seven days a week.

So whether you're building, buying, or integrating applications, VMARK has a solution for you. Contact us to learn why VMARK means business.

800-966-9875

We Mean Business.
VMARK
SOFTWARE
HomePage http://www.vmark.com
E-mail info@vmark.com

uniVerse	HyperSTAR	Object Studio	Co•STAR	Vantage
RDBMS	Object Messaging Middleware	Application Development	GUI Development	Professional Services

©1995 VMARK Software Inc.

If he used our software, he'd be even more flexible.

Let's face it, with reengineering mandates coming out practically daily, it's impossible to be too flexible. Dun & Bradstreet Software's SmartStream® client/server applications feature decision support capabilities and built-in configurable workflow that not only energize your existing business environment, but adapt quickly as your needs change. Call us at 1•800•290•7374, ext. 960, or reach us on the Internet at solutions@dbsoftware.com.

Dun& Bradstreet Software

FINANCIALS HUMAN RESOURCES MANUFACTURING DECISION SUPPORT

© 1995 Dun & Bradstreet Software Services, Inc

Informix's Phil White on AT&T Enterprise Servers.

"Our database is designed to grow with your business.
AT&T Servers are the perfect engine for it to grow on."

Phil White, CEO, Informix Software

intel inside

Informix and Dynamic Scalable Architecture are a registered trademark and trademark, respectively, of Informix Software, Inc. AT&T 3550 shown features Intel processors. The Intel Inside Logo is a registered trademark of Intel Corp.

At AT&T, we're committed to making sure all the applications you need are optimized for our servers. That's why we've developed an alliance with a leading database provider like Informix.®

INFORMIX®

Whether you're just starting to test an application out on a uni-processor or running it on an SMP cluster, the one thing you can't afford is a database that can't grow with your business. Informix's Dynamic Scalable Architecture™ gives you the ability to start out all your enterprise apps at one level and then scale them up rapidly on as many processors as you need. And the platform that has the scalability and flexibility to enable you to use Informix's scalable capabilities to the max? The Enterprise Servers from AT&T. The scalable database platform.

To get more info about AT&T Servers, call 1 800 447-1124, ext. 1130.

GET move USE IT

Bringing computing and communications together to help you get, move and use information.

AT&T
Global Information
Solutions

© 1995 AT&T Global Information Solutions. All rights reserved.

HP, Oracle to integrate storage, database

Move will especially help government, insurance, health care with archiving

By Steve Moore

Users shell-shocked by spiraling data warehousing costs took heart last week from the technology integration plans announced by Oracle Corp. and Hewlett-Packard Co.

HP's optical jukeboxes and hierarchical storage management (HSM) software have been integrated with Oracle's relational database product family to support archival storage for large-scale corporate data warehouses.

A data warehouse is a massive database of business-related information that is structured to allow fast queries and summaries.

At Martin Marietta Corp. in Orlando, Fla., senior consultant Frank Belland said certain departments in the company "would definitely take a look at this technology."

Data warehousing

Belland said HP is soon expected to support management of Oracle databases "as part of their integration with Oracle on top of [OpenView] Operations Center."

Analysts also blessed the marriage of HSM and database technologies. Such an integration will be especially helpful for government, insurance or health care organizations because they must maintain large amounts of data over long periods of time, said Mark Friedman, a principal consultant at Demand Technology, Inc. in Naples, Fla.

"This means you will be able to run a very large Oracle database and only keep active data on disk, migrating inactive data to much cheaper near-line storage," he explained. But for such a scheme to work well, he added, users must size their disks so that the most active data stays on disk and near-line data isn't accessed often.

Swelling capacity

Until recently, users have been unable to get reliable Unix-based storage systems above 400G bytes in capacity, said Paul Cubbage, director of client/server software research at Dataquest, Inc. in San Jose, Calif. "This is the first time anybody has integrated this kind of hardware into a data warehouse," he said.

The recently announced SureStor Optical 300ST magneto-optical jukebox [CW, Aug. 7] — HP's largest — currently has a capacity of 309G bytes and will hold 600G bytes when next-generation 2.6G-byte drives become available next year.

The four key challenges in data warehousing involve collecting data, finding a place to store it, organizing it and providing access to it, Cubbage said. The HP/Oracle integration will help with the storage and organization end.

Some users said they were interested in data warehousing integration but questioned the idea of moving data from on-line to near-line storage.

"That contradicts the concept of a data warehouse [because] there really is no 'most queriable' data in a data warehouse," said Glenn Travis, database administrator at Circuit City Stores, Inc. in Richmond, Va.

When "running trends, aggregates and summaries," he added, it is necessary to look at all of the data in a warehouse in order to obtain "any kind of [decision-support system] kind of answer.

& **IBM slips** on tape storage delivery, while ITT Hartford finds savings in warehousing. See pages 59 and 60.

BIGGER AND BIGGER VS. BETTER AND BETTER.

MAKE THE BETTER CHOICE — 4TH DIMENSION SOFTWARE

Our competitors are still gobbling up companies—piecing together acquired technology to give a semblance of integration and a hint of interoperability. Meanwhile, we continue to develop and deliver solid solutions for managing enterprise operations automation—while providing the kind of service and support you can rely on.

Based on common methodology, 4th Dimension Software's CONTROL™ line of products provides true integration and interoperability. We supply the most comprehensive solutions for **production control and scheduling, automated systems operations, output management, removable media management** and **data integrity**—installed at more than 1,400 data centers worldwide.

The choice is yours. Bigger or Better. Make the better choice and call us for more information.
800.347.4694, Ext. 522. or 714.757.4300, Ext. 522.

4th DIMENSION SOFTWARE INC.

COMPUTERWORLD

Professional Courtesy Voucher

☐ **Yes**, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of $39.95* per year - a savings of $8.05 off the basic subscription price.

First Name MI Last Name

Title

Company

Address

City State Zip

Address shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: $48 per year

* U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars. For faster service, fax your order to (508) 626-2705.

SAVINGS STATEMENT

Regular Subscription Price

~~$48.00~~

Your Special Rate

$39.95

Your Savings

$8.05

E4H5-2

COMPUTERWORLD

Professional Courtesy Voucher

☐ **Yes**, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of $39.95* per year - a savings of $8.05 off the basic subscription price.

First Name MI Last Name

Title

Company

Address

City State Zip

Address shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: $48 per year

* U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars. For faster service, fax your order to (508) 626-2705.

SAVINGS STATEMENT

Regular Subscription Price

~~$48.00~~

Your Special Rate

$39.95

Your Savings

$8.05

E4H5-2

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 1131 FRAMINGHAM, MA

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
CIRCULATION DEPT
375 COCHITUATE ROAD
FRAMINGHAM MA 01701-9494

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 1131 FRAMINGHAM, MA

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
CIRCULATION DEPT
375 COCHITUATE ROAD
FRAMINGHAM MA 01701-9494

DON'T MISS COMPUTERWORLD'S LEADERSHIP SERIES

Our Leadership Series brings provocative, thought leadership to the pages of Computerworld every month. This special monthly feature is a must read for CIOs, CFOs and CEOs. The Computerworld Leadership Series spotlights the perspectives of prominent thinkers in the IT world on a wide range of topics and can help put you on the road to strategic success.

COMING IN THE AUGUST 21 ISSUE OF COMPUTERWORLD

COMPUTERWORLD

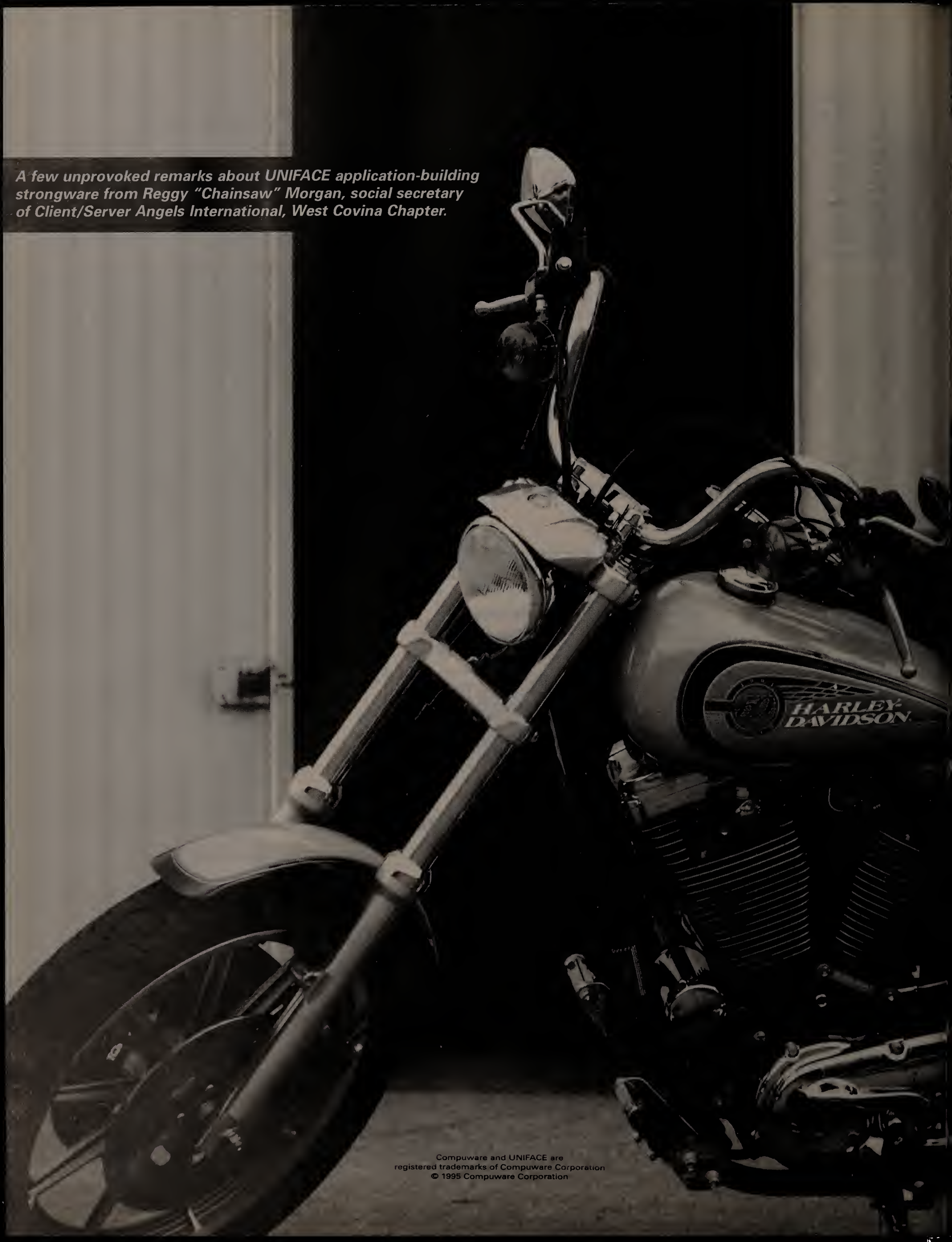
·Leadership Series·

The Eastern Road to IT

BY SHUJI HONJO

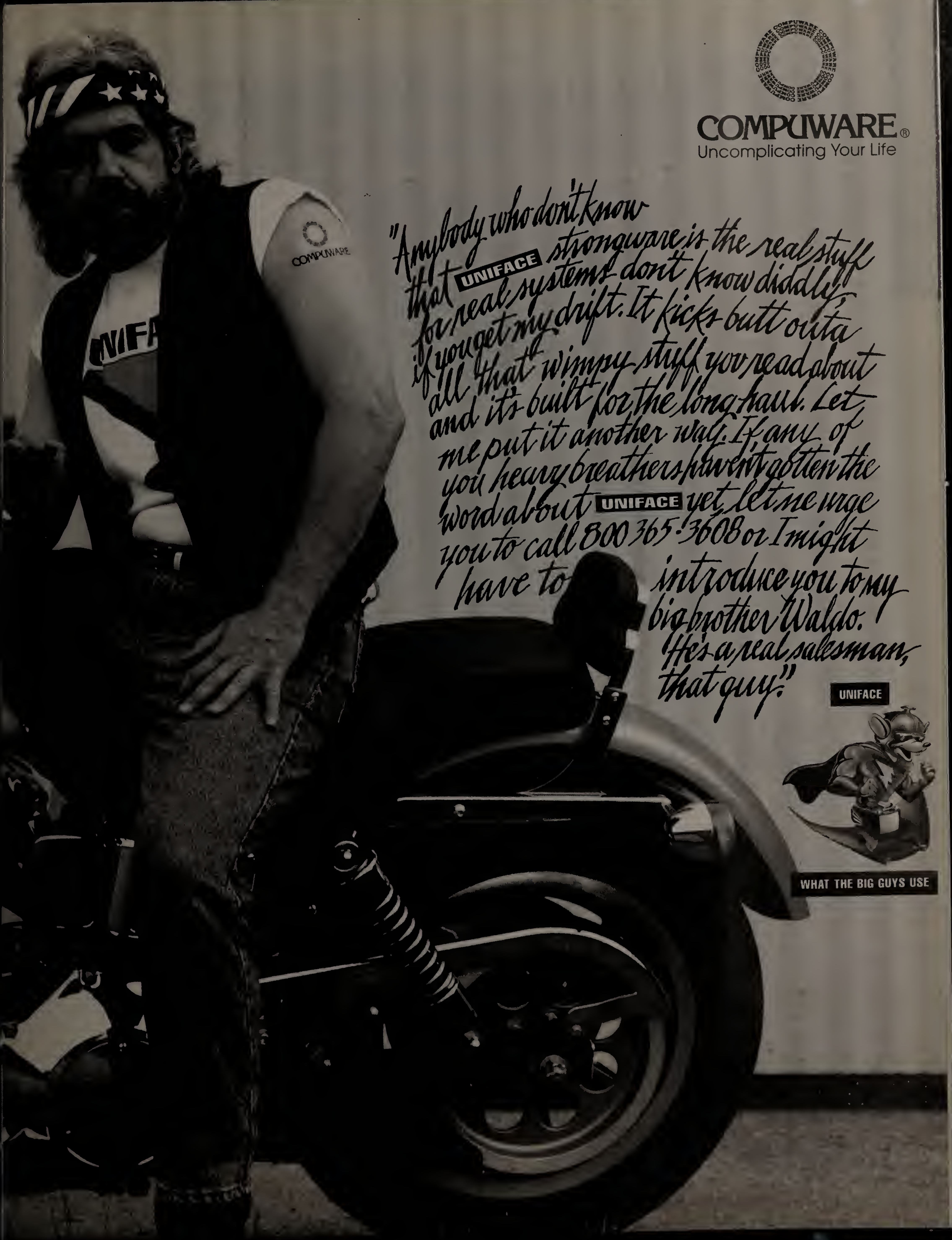
Visionary companies in Japan are rethinking the role that IT plays in business strategy, with some pretty dramatic results. Like the adoption of TQM on the factory floor, Japan's new approach to IT could prove a major competitive weapon. Unlike many companies in the West, the focus is not on adoption of cutting-edge technology but on using IT to leverage human creativity. Shuji Honjo, this month's Leadership Series author, argues that U.S. companies could learn a thing or two from these Japanese pioneers.

COMPUTERWORLD
The Newspaper of IS


A few unprovoked remarks about UNIFACE application-building strongware from Reggy "Chainsaw" Morgan, social secretary of Client/Server Angels International, West Covina Chapter.

Compuware and UNIFACE are
registered trademarks of Compuware Corporation
© 1995 Compuware Corporation

COMPUWARE®
Uncomplicating Your Life



"Anybody who don't know that UNIFACE strongware is the real stuff for real systems don't know diddly, if you get my drift. It kicks butt outa all that wimpy stuff you read about and it's built for the long haul. Let me put it another way. If any of you heavy breathers haven't gotten the word about UNIFACE yet, let me urge you to call 800 365-3608 or I might have to introduce you to my big brother Waldo. He's a real salesman, that guy."

UNIFACE

WHAT THE BIG GUYS USE

No time for training throws IS off track

By Julia King

Now that companies are coughing up more money to train information systems professionals in new technologies, many IS organizations are hard-pressed finding the time to spend it.

Consider the case at Gas Research Institute in Chicago. In the past two years, the company has migrated from a mainframe-based to a client/server environment, deployed Powersoft Corp.'s PowerBuilder and Notes-based groupware applications and installed a networked Windows-based PC on every user's desk.

"Do my people need more training? Definitely, but it becomes a matter of time and juggling priorities," said John G. DaSilva, systems development manager. "One problem is that people are traveling, and it becomes a chore to schedule training. Another problem is getting training at the right moment in time."

Spending to increase

Still, companies will spend 6% of their overall IS budgets on training this year, up from 4.5% last year, reports an as-yet-unreleased survey of 100 executives conducted last month by International Data Corp. (IDC) in Framingham, Mass.

Moreover, the worldwide market for technical training and education will balloon from $9 billion this year to $12 billion next year, according to a recent study by Dataquest, Inc. in San Jose, Calif.

"Life after downsizing means heavy doses of [information technology] education and training for survival," explained Dennis Wayson, director of Dataquest's professional services program. "These lean companies are asking employees to accomplish more in shorter periods of time. One way to accomplish that is through ample education and training."

CAUTION
STUDENT DRIVER

Always learning

Key areas IS professionals need training in include the following:

- CLIENT/SERVER SYSTEMS DEVELOPMENT
- GRAPHICAL USER INTERFACES
- PROJECT MANAGEMENT
- DATA MODELING
- DATA ADMINISTRATION

But what upper management must also realize, IS managers said, is that truly useful training takes time — an ultra-precious commodity in already over-extended IS departments.

"At our organization, training is something you have to fight for because management wants to see immediate paybacks," said Frank Petersmark, senior systems manager of technical support at The Amerisure Cos. in Southfield, Mich. "It is not like you can send someone to class and they come back and they are ready to go."

In general, he said, it has taken former mainframe application developers about 18 months to make the transition to client/server.

At Spalding Worldwide Sports in Chicopee, Mass., Chief Information Officer Bard White makes it the IS managers' business to be sure their staffs get at least two weeks of training annually. If they don't, it goes down in the manager's — not the staffer's — performance evaluation.

IS managers at Washington National Insurance Co. in Lincolnshire, Ill., "just bite the bullet" and force staffers to go to training "even though it creates a hardship" for those left to cover, said Wade Brown, executive vice president and CIO. Between this year and next, Brown said, the firm will increase its IS training budget by about 10%.

The bottom line, according to IDC analyst Ellen Julian, is that getting the money is only half the battle. Finding the time to spend it can be an IS Waterloo if they are not careful, she said.

Video help file

One way to train employees without having them take a lot of time off is to keep them right at their desks. Network-based multimedia training lets them do that.

Starlight Networks, Inc., which sells software that lets users access multimedia over a network, last week teamed with Sun Microsystems, Inc. to provide video training courses. The product, Training on Demand, runs Starlight's StarWorks software on a Sun SPARC server and comes with a choice of training videos for software — including Microsoft Corp.'s Windows 95. PCs need to be outfitted with a Motion Picture Experts Group video standard-based card to use it.

The bundling was designed to address issues such as network capability, additional hardware and the costs of custom training applications, said Stephen Mitchell, a vice president at Mountain View, Calif.-based Starlight.

Not everyone is convinced users will access desktop training to learn an application. "What I think this is neat for is follow-up training after someone has taken a class," said Alexis dePlanque, an analyst at Meta Group, Inc. in Stamford, Conn. "It is more like a video help file." — *Tim Ouellette*

Silicon Graphics scales past limits

Irix Networker takes on enormous files, archives

By Steve Moore

Storage management

Silicon Graphics, Inc. has delivered a storage management package that breaks through the Unix file system's traditional limitations.

SGI's Irix Networker 4.11 backup and archiving application can theoretically support individual files as large as 17 terabytes and an overall file system as large as 17 million terabytes. Unix file systems have limits of 8G bytes.

"We can handle a file system larger than [could be contained on] all the drives ever made," said Robert Clark, SGI's marketing manager for storage management systems. Several SGI customers today have overall storage requirements in the petabyte, or quadrillion byte, range (see chart).

Indeed, users are eager for highly scalable storage management. The department of architecture and urban design at the University of California at Los Angeles, for one, has drives larger than 8G bytes that must be broken into partitions so they can be managed with the Unix file system.

"We would definitely be interested" in a package such as SGI's, said Bill Jepson, the department's director of computing.

UCLA used SGI's 64-bit Challenge supercomputers to create a three-dimensional terrain model of Los Angeles, Jepson said. In its first cut at a real-time image server that supports remote access to a database of 83 municipalities, Jepson noted, the department is "looking at a terabyte of image data and 50 to 100 gigabytes of geometry [data]."

With UCLA and other major customers clamoring for rapid, random access to gargantuan data archives, SGI chose to roll its own storage management application because off-the-shelf packages couldn't cut the mustard. But instead of starting from scratch, the Mountain View, Calif., company — known for its digital graphics wizardry — transformed a 32-bit application into a 64-bit screamer.

Under an OEM agreement, SGI metamorphosed Legato Systems, Inc.'s Networker backup and archiving application into Irix Networker 4.11.

"When we change the source code, we give it back to Legato and they incorporate the changes back into the original source," Clark explained. To move beyond departmental applications to enterprise applications, Legato "must make [Networker] support 64-bit servers like ours and DEC's Alpha," he said.

Irix Networker prices range from $2,500 to $100,000. At the high end, users are adding capabilities such as robotic libraries and software for large numbers of clients, he said.

Availability key

Analysts applauded SGI's tweaking of Networker. "Through various OEM agreements, Legato's very portable Networker package shows up everywhere; that's its real strength," said Mark Friedman, a principal consultant at Demand Technology, Inc. in Naples, Fla.

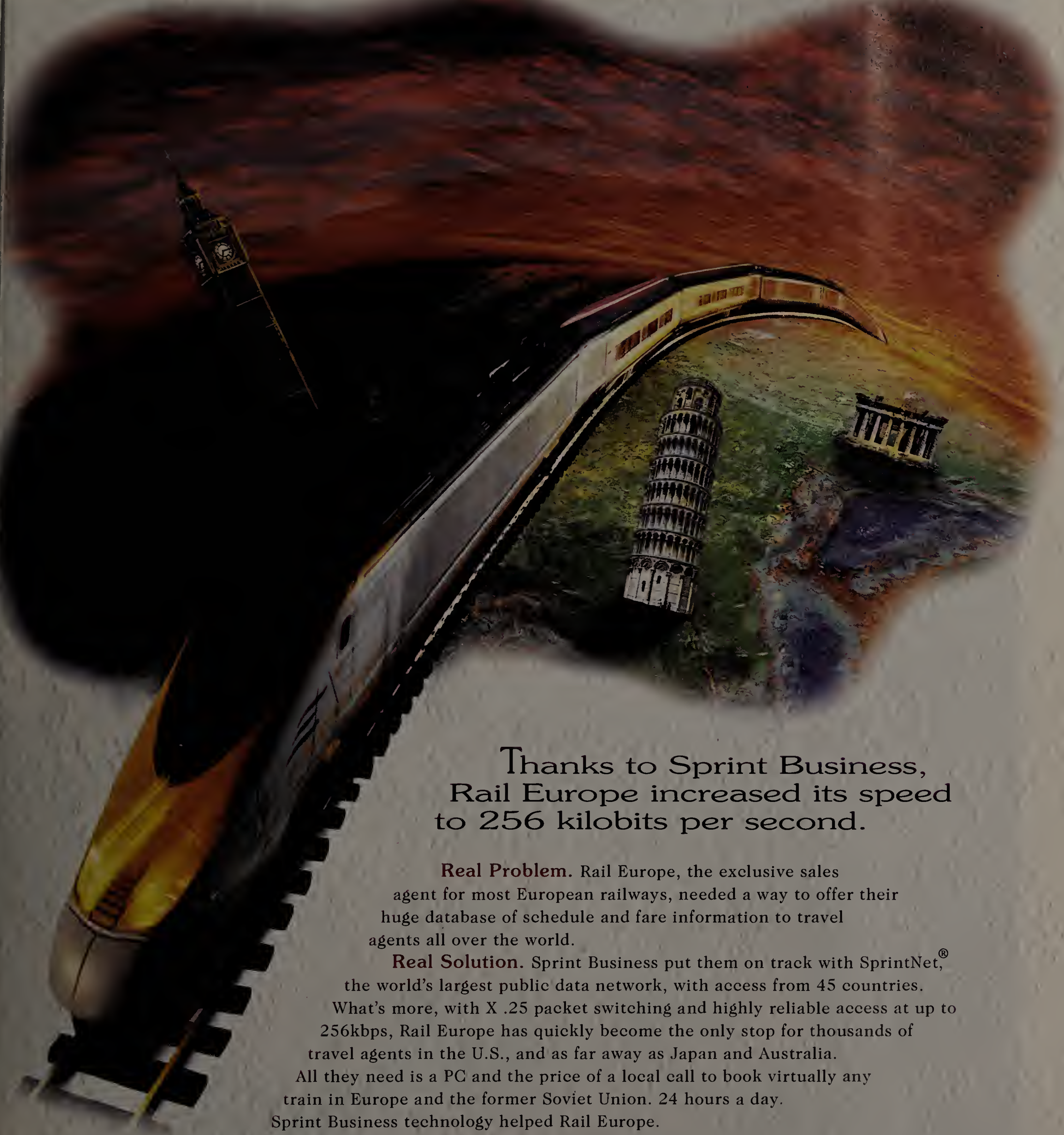
Also, Friedman noted, Legato uses a tape format that is "standard across all their environments instead of each environment having a proprietary format." That makes it easy to create tapes on one system and read them back on another.

To overcome previous Unix file system size limitations, SGI wrote a new file system, called XFS, from scratch because "there is no reason in a 64-bit environment that you need to be limited in file size," Clark said.

How high can you count?

If there were such a thing as a one-petabyte disk drive, you could store more than 160,000 feature-length movies on it. A petabyte contains one quadrillion bytes.

			Number of bytes
Kilo	=	1,000	Thousand
Mega	=	1,000,000	Million
Giga	=	1,000,000,000	Billion
Tera	=	1,000,000,000,000	Trillion
Peta	=	1,000,000,000,000,000	Quadrillion
Exa	=	1,000,000,000,000,000,000	Quintillion
Bronto	=	1,000,000,000,000,000,000,000	Sextillion



Thanks to Sprint Business, Rail Europe increased its speed to 256 kilobits per second.

Real Problem. Rail Europe, the exclusive sales agent for most European railways, needed a way to offer their huge database of schedule and fare information to travel agents all over the world.

Real Solution. Sprint Business put them on track with SprintNet,® the world's largest public data network, with access from 45 countries. What's more, with X .25 packet switching and highly reliable access at up to 256kbps, Rail Europe has quickly become the only stop for thousands of travel agents in the U.S., and as far away as Japan and Australia. All they need is a PC and the price of a local call to book virtually any train in Europe and the former Soviet Union. 24 hours a day. Sprint Business technology helped Rail Europe. Let us help *your* business do *more* business.

Sprint. Business

1-800-669-4700

©1995 Sprint Communications Company L.P.

© 1995 Hewlett-Packard Company

You want open systems computing.
You don't want to move mountains of
critical data to a new platform.

What computer system do you have?

If you're running an IMAGE/SQL or ALLBASE/SQL database on our HP 3000, you can gain the flexibility and improved data access of client/server computing without the steep learning curve, high development costs, and risk of moving your data to a new platform.

If the business decisions are yours,
the computer system should be ours.

HEWLETT® PACKARD

Computer Systems

Computer Industry

GM spins EDS out on its own

Services subsidiary eyes rapid expansion

By Neal Weinberg

Computer services

General Motors Corp.'s decision last week to give subsidiary Electronic Data Systems Corp. its freedom will add a hungry new player to the world of telecommunications-related mergers and acquisitions.

Already the largest computer services company with $10 billion in annual sales, EDS has been itching to hook up with a telecommunications company as a way to expand into new markets.

EDS's prior efforts to close deals with AT&T Corp., BT and most recently Sprint Corp. have fallen through in part because EDS was not an independent company, according to analysts.

EDS
Plano, Texas
1994 REVENUE
$10B
VALUE OF STOCK
$22.31B
EMPLOYEES
80,000

GM announced last week it would spin off the computer services giant in a straight stock transfer valued at $22.31 billion. The move is expected to be completed by early 1996.

Tim Bourgeois, an analyst at International Data Corp. in Framingham, Mass., said EDS has grown 25% annually in the past three years. So it doesn't need to do anything radically different as far as its current operations are concerned, he added.

The company's bread and butter is managing the data center operations of large companies. More than one-third of EDS revenue comes from GM, a relationship that is expected to continue after the spin-off.

EDS is also moving into high-end consulting. For example, the company spent $300 million two months ago to purchase A. T. Kearney Co., a management consulting firm.

But the company wants to become a full-service provider of voice, data, multimedia, Internet access and even cable television services, according to Bourgeois.

The only hurdle GM must face is the Internal Revenue Service, which has to rule on a request that the stock transfer occur without tax liability. GM plans to take the Class E stock it gave shareholders when it bought EDS and convert it to EDS stock.

A telecommunications reform bill being finalized by Congress would allow cable companies, long-distance carriers and regional Bell operating companies to enter one another's markets.

Analysts say if President Clinton signs the bill this fall, it will bring a wave of telecommunications takeovers. EDS is expected to be a participant.

Based in Plano, Texas, EDS was founded in 1962 by Ross Perot. GM bought the company in 1984 for $2.5 billion.

New York eases taxes to create multimedia mecca

By Thomas Hoffman

N2K *is looking forward to 'sharing ideas and technologies' with other multimedia outfits settling in at the New York Information Technology Center, said N2K President J. J. Rosen (shown here in television)*

Multimedia

After losing nearly 100,000 jobs in the past decade, New York City is rebounding as a multimedia mecca.

Entrepreneurs from as far away as Germany are clamoring to lease space here for their multimedia ventures. They are being lured by lucrative tax breaks and other economic incentives the city is pitching to budding media outfits.

Feeding off the new media frenzy are aspiring artists, writers, filmmakers and musicians. And while New York may not be endowed with the high-tech name recognition that Silicon Valley and Seattle enjoy, multimedia firms here have proximity to content-hungry media and advertising giants, such as Time-Warner, Inc. and Young & Rubicam, Inc.

In fact, the New York New Media Association, an industry group founded last summer, has swelled to 1,300 individual members in the past year, said Brian Horey, the group's president. The membership represents 800 regional software/multimedia companies, of which roughly 650 are based in Manhattan, he added.

That is good news for New York, which has watched scores of businesses pull up stakes and relocate to New Jersey, Connecticut and outlying suburbs during the past 10 years.

With 29 separate tax rates in New York City — most of which fall heavily upon small businesses — the current business climate in Gotham is "self-defeating," said Robert R. Kiley, president and chief executive officer of the New York City Partnership, Inc.

The partnership is a long-standing group of chief executive officers from New York's leading corporate and civic institutions such as Nynex Corp. and IBM.

Incubating profits

To help nurture New York's multimedia boom — and fill the 20 million square feet of vacant office space in lower Manhattan — New York Mayor Rudolph W. Guiliani has also gotten into the game. The mayor drafted a revitalization plan that includes a 50% real estate tax abatement for the first three years of occupancy, a commercial rent tax exemption and a 30% reduction in electricity costs over two years.

Guiliani's proposal, which gained approval from the New York City Council and the New York State Legislature, is expected to pass in a special session of the state Senate next month.

The mayor's plan is key to the partnership organization and other sponsors such as KPMG Peat Marwick. In October, the group plans to open the New York Information Technology Center, a 400,000-sq.-ft. multimedia "incubator" that could house up to 350 companies in its 55 Broad St. location.

The facility is expected to provide would-be tenants with affordable office space, office equipment and venture capital services. It will also be retrofitted with a fiber-optic backbone to meet the sprawling communications requirements of its high-tech occupants, said John Gilbert, chief operating officer at Rudin Management Co., a large New York real estate agent and another sponsor of the effort.

But it was the promise of tax breaks and the chance to rub elbows with other creative types that led N2K, Inc., a Brooklyn software developer, to become one of the first companies to lease space in the building.

"We liked the concept of having a community of other companies in this building, to share technologies and ideas with," said J. J. Rosen, president of N2K. The company sells an interactive, CD-ROM-based jazz catalog, called Jazz Central Station, for record label GRP.

Briefs

Netscape soars with IPO

Mountain View, Calif.-based **Netscape Communications Corp.** went public last week, much to Wall Street's elation. Traders pushed more than 13.8 million shares to a peak of $75 last Wednesday, Netscape's first day on the NASDAQ exchange. Shares closed that day at $58.25, double the $28 offering price (see story, page 113).

Cisco to acquire Combinet

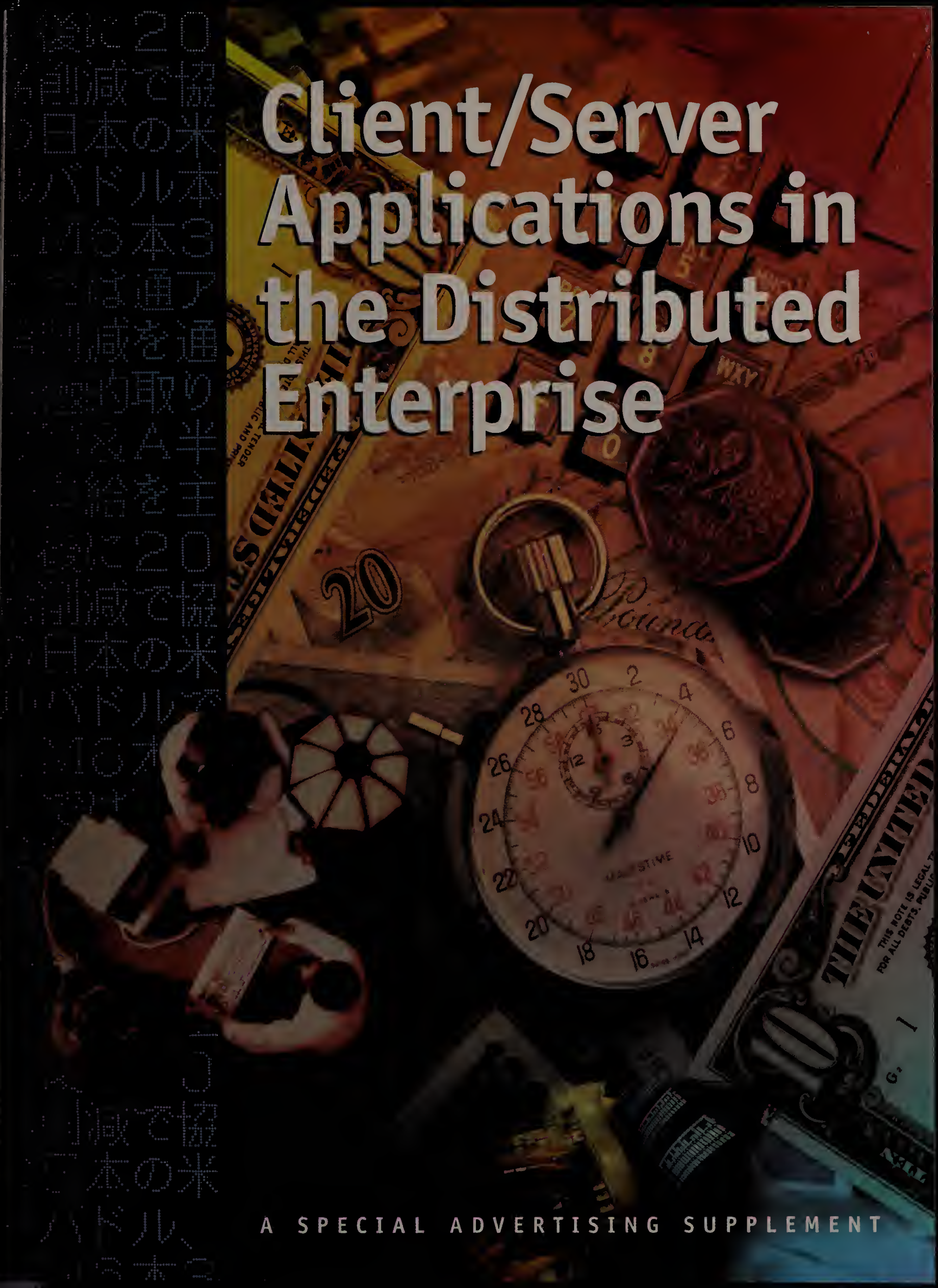
Internetworking giant **Cisco Systems, Inc.** in San Jose, Calif., moved to shore up its remote access product line by announcing plans to buy **Combinet, Inc.** in Sunnyvale, Calif. Combinet makes remote access products that use Integrated Services Digital Network wide-area network links. The acquisition is expected to be completed by the end of next month via a stock swap with an estimated value of roughly $114 million.

Baan has solid quarter

Baan Co., a Menlo Park, Calif., developer of enterprisewide resource planning software, announced revenue of $47.3 million for the quarter that ended June 30. The figure represents a 122% increase over the $21.3 million reported in the same quarter last year. Net income rose to $3.3 million; last year it had a $2.6 million loss in the period.

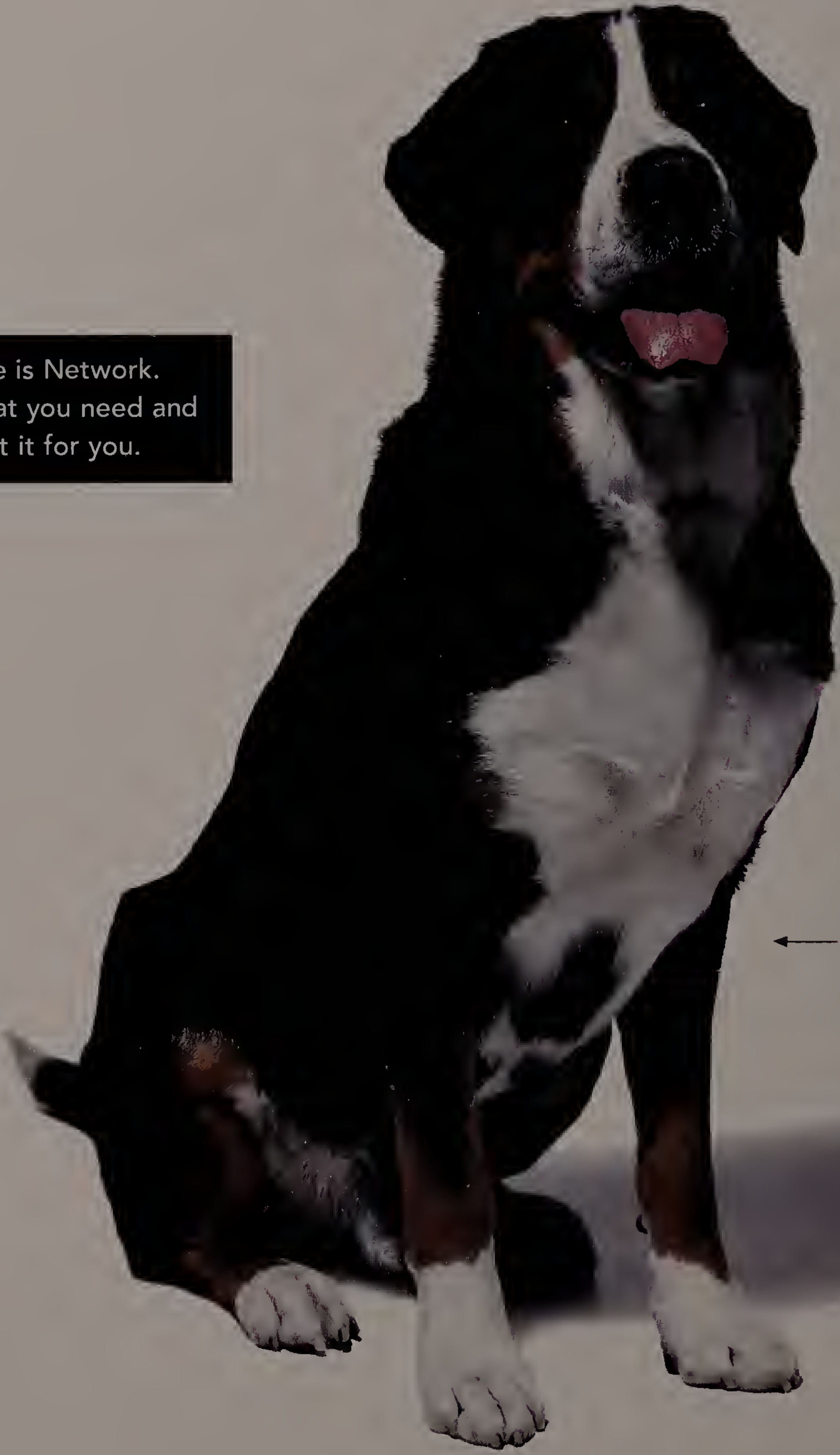
SHORT TAKES Platinum Technology, Inc. in Oakbrook Terrace, Ill., last week announced its acquisition of **Answer Systems, Inc.**, a developer of client/server support applications.

Client/Server Applications in the Distributed Enterprise



A SPECIAL ADVERTISING SUPPLEMENT

His name is Network.
Tell him what you need and
he'll get it for you.



Think about all the different computers in your company that don't even talk to each other. Now imagine being able to turn that bottled-up power into one worldwide network that makes you more competitive. A network so powerful and so approachable that it becomes almost a living thing. That gets you whatever you want, whenever you want, without asking why. At Sun, we think that's the whole point of network computing. And we have the hardware, the software, the support and the experience to make it all work for you. If you'd like to see what network computing can bring you, just contact the people who invented it. Sun. At http://www.sun.com or 1-800-786-0785, Ext. 250.

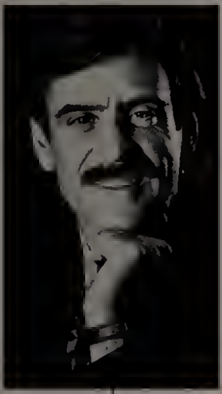
Sun
THE NETWORK IS THE COMPUTER™

© 1995 Sun Microsystems, Inc. All rights reserved Sun, Sun Microsystems, the Sun Logo and The Network Is The Computer are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries

The Enterprising Enterprise

Companies are beginning to use database technology to boldly go where no database has gone before. What kind of information architecture do they need to explore brave new worlds?

BY DENNIS McEVOY
Vice President of Products, Sybase, Inc.



REMEMBER the good old days? When product life cycles were measured in years? When you had time to think and plan? In 1995, the globe is a lot smaller, and time is a lot shorter. In today's hyper-competitive marketplace, it's not uncommon for products to move from drawing board to shrink-wrap in less than 12 months.

This acceleration is placing enormous pressures on information systems professionals, who are increasingly under the gun to produce applications in as little as three months that support evolving business processes and requirements. You're also expected to perform miraculous feats, deploy mission-critical applications on every computing platform under the sun, and bring real-time data to every desktop in the company.

The competition will stop at nothing to serve their customers faster and better. Which means that you'll need to come up with ingenious ways of helping employees be creative and productive.

Anytime, anywhere computing

Cutting-edge companies recognize that data can be used proactively, to help predict business trends and seize new opportunities. Data needs to be current, accurate and synchronized in order to support seamless and up-to-the-minute business operations. This places new demands on information systems.

Online transaction processing (OLTP) systems — the workhorse operational business systems — are being pushed to new heights. For example, AT&T's Directory Assistance needs to distribute over 300,000 updates per day to its call centers throughout the country, while maintaining 100% uptime and near real-time status of all customer information.

Beyond OLTP, companies are looking for simpler and more meaningful ways to interpret data. For example, Blue Cross of California has built a data warehouse to improve actuarial analysis of stored information to make better pricing, product development and marketing decisions.

Because of the variety of applications and uses, there's no "one-size-fits-all" technology solution that can meet all your computing requirements.

Companies also want to put key information in the hands of large numbers of remote users...no matter when, no matter where. Metro Goldwyn Mayer, for example, has automated its sales force with notebook computers and CD ROMs that contain an en-

Distributed Enterprise Requirements

	OLTP Mixed Workload	Data Warehouse DSS	Mass Deployment
Database	Price/Performance Scalability Availability	Planned and unplanned queries Scalability Price/performance	Small footprint Low cost Easy-to-use Self-tuning
Middleware	Heterogeneous high speed replication High speed gateways	Mainframe integration Transparent access to all data	Mobile Messaging
Tools	Industrial strength Multiple skill sets Multiple databases	Easy-to-use Access to multiple data sources	Easy-to-build Easy-to-use

The technological requirements for today's distributed enterprise are placing enormous new pressures on IS professionals.

tire inventory of film clips they can demonstrate. Other examples of anytime, anywhere computing abound. A large oil company is connecting its databases to gas tanks so that the company can fill the tanks before the service station makes a telephone call. A greeting card company provides store kiosks so customers can write their own greeting cards, tapping into the company's verse database for inspiration.

Then there is the brave new world of electronic commerce made possible by the explosive growth of the Internet, the World Wide Web and electronic data interchange (EDI).

No one solution fits all

To implement applications that can deliver information to users in these new and diverse ways, what do you need? Because of the variety of applications and uses, there's no "one-size-fits-all" technology solution that can meet all your computing requirements.

To build applications that span your requirements from OLTP, to decision support, to nomadic computing, you'll need database technology, middleware products and tools that are each suited for a given task, yet fit together seamlessly.

For example, your company's pricing information is used in different ways. Marketing needs a high-performance advanced indexing database to analyze why a new pricing strategy is producing phenomenal results in the Midwest. Sales needs another database optimized for high throughput to produce price quotes in the field. Most database companies would not be able to address these different needs in a uniform way, so you'd be re-writing many applications to talk to each other. A set of modular but interoperable database, middleware and tools technologies will allow you to select the right tool for the right job, whether you're automating a single business task or linking the entire enterprise.

Beyond the basics of OLTP

Information processing has moved beyond the capabilities of a simple database engine. Your database engines now need to handle different types of tasks simultaneously — high-speed transactions, query-intensive decision support, or batch reports. Is your database adaptable to varying workloads throughout the day?

Your OLTP systems need to span different departments and functions, so you'll need to be able to keep data up-to-date and in sync, even if some of your operational data resides on a DB2 mainframe system and other data is generated by PCs in branch offices. Are your gateways and interoperability products fast enough to keep up with the workload and able to neutralize the differences between different data types and hardware platforms?

SYBASE®
OPEN SOLUTIONS PARTNER

New for version 2.0
a comprehensive
Training Administration
module that provides
complete recordkeeping and
administrative support

THE SOLUTION SERIES®
ST

Client/Server HRMS . . . Right In The Palm Of Your Hand.

That's what *The Solution Series®/ST™* is all about…Selectable Technology. Client/Server Human Resource Management System (HRMS) options at your fingertips. Cyborg provides the strongest human resource management, payroll administration, and time and attendance applications in the industry, plus all of the technology options you'll need to create a client/server solution that's right for *your* business…

Flexible Client/Server Choices… Of Course
Relational database technology… Oracle, Sybase, DB2, Rdb…GUI's… Windows, Macintosh…Every popular operating system and communications protocol…The client/server choices are yours.

Superior HRMS Design…Expect It
There isn't an HR-related event we can't handle. We offer true strategic decision support and unmatched HRMS data tracking and compliance.

Global Configurations…No Problem
Whether you're operating your business in one country or many…Cyborg has the HRMS solution you need.

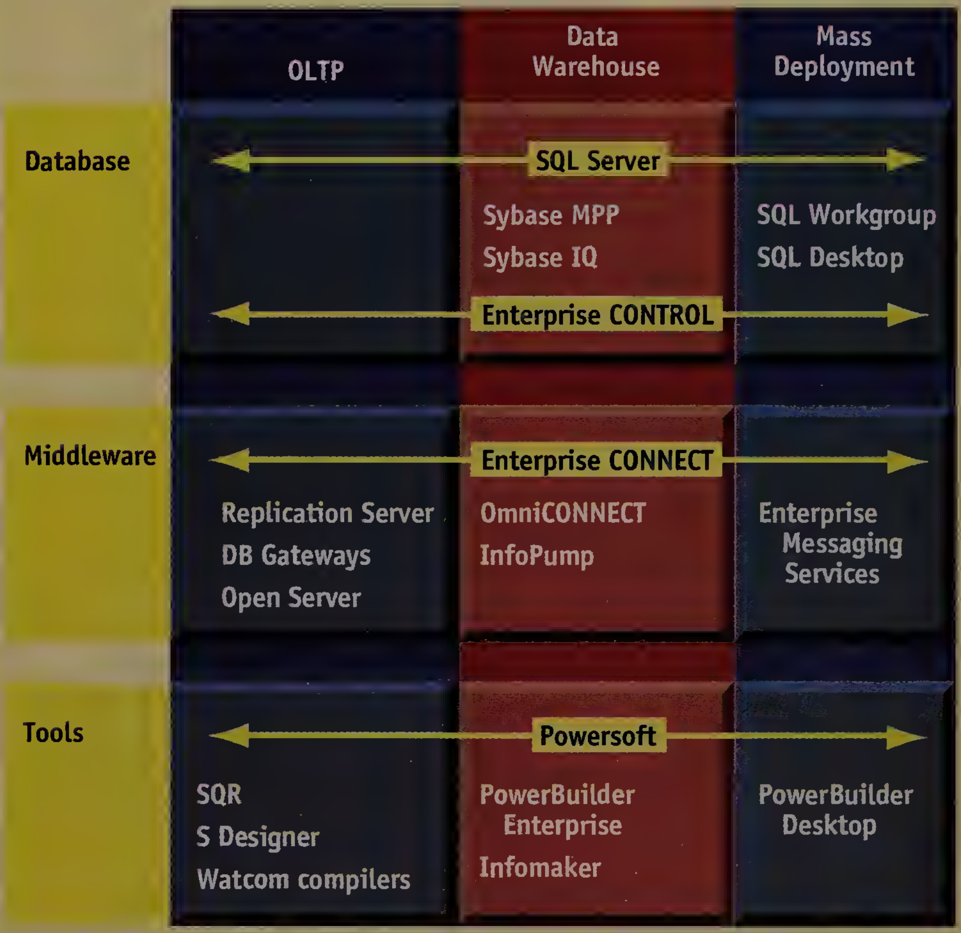
Quality Leadership…It's Fundamental
Every vendor claims it, but Cyborg is the *first and only* HRMS software company to achieve ISO 9000 quality standards registration.

We give you all of the options. You decide the technology mix that's right for your enterprise. Give us a call at 312/454-1865 and realize just how easy it is to have HRMS technology and functionality in the palm of your hand. *The Solution Series/ST*…it's the smart choice.

CYBORG SYSTEMS®
Quality Options in Human Resource Technology
2 North Riverside Plaza 12th Floor Chicago, IL 60606-0899 312.454.1865 Fax 312.930.1033

©1994 Cyborg Systems,Inc. All brands or product names are trademarks or registered trademarks of their respective owners.

Sybase's Enterprise Architecture



	OLTP	Data Warehouse	Mass Deployment
Database	SQL Server		
		Sybase MPP Sybase IQ	SQL Workgroup SQL Desktop
	Enterprise CONTROL		
Middleware	Enterprise CONNECT		
	Replication Server DB Gateways Open Server	OmniCONNECT InfoPump	Enterprise Messaging Services
Tools	Powersoft		
	SQR S Designer Watcom compilers	PowerBuilder Enterprise Infomaker	PowerBuilder Desktop

Sybase offers a modular and interoperable set of products to help today's distributed enterprise meet its requirements.

Spot trends and predict opportunities

Very large data warehouses are a different animal. These need to support complex, what-if questions interactively.

In this type of creative thinking process, you don't want to be limited in the way you access and manipulate data. Can your database index 100% of the data so that you can get answers quickly and easily? Does your database let you ask *any* question and get answers faster than a mainframe?

You'll also need to consolidate data from a number of different sources to populate your data warehouse. Do you have high-speed gateways that allow you to transfer data seamlessly to all your data sources, regardless of physical location or brand of database?

Extend your business

To put data in the hands of your customers, suppliers and field staff, you need to think about cost and ease of use. With mass deployment, the financial justification becomes cost per user rather than cost per transaction. You need a database that's so easy a novice can use it, small enough to fit onto a palmtop computer and priced low enough so you can empower tens of thousands of people with realtime information. Does your database do all of this, without a DBA?

Consider the challenge of getting data to and from the far reaches of the globe. You'll probably be using wireless or satellite networks, which means you may not be able to rely on a continuous, error-free connection between your host systems and nomadic users. Does your middleware handle both session-based and message-based computing?

Tools to pull it all together

To develop the right systems for these widely differing requirements, you will want to be able to use a set of tools that leverage your staff's skills across all your systems. A standardized set of rapid application development tools that are simple enough for a power user and yet sophisticated enough for mission-critical systems will help you implement your applications more quickly.

Conclusion

By implementing technologies that operate independently as well as interdependently, IT professionals can address the end-to-end needs of the organization. With careful planning and the right technological foundation, corporations can look forward to a future in which their suppliers, customers and users can work together in an "anytime, anywhere" computing universe.

Client/server applications: requirements, solutions and alliances

BY HENRY MORRIS

Research Manager, Vertical Applications Research, International Data Corp.

ENTERPRISE client/server applications represent one of the fastest-growing of all software markets. IDC measures the total market in 1994 for enterprise client/server applications (including accounting, manufacturing, human resources and distribution) at $1.923 billion, which represented a 78% growth rate over 1993. Sales include purchases of applications in a single functional area (such as accounting) or integrated suites of business applications spanning multiple business functions (such as accounting, human resources and distribution).

This dramatic increase in demand shows the growing acceptance of client/server as the architecture for delivering applications that automate operations critical to the enterprise.

What accounts for this trend? Why are organizations moving to enterprise client/server applications? IDC surveys have consistently shown two factors to be most significant:

End-user data access: Business users demand direct access to information in order to make better decisions and to uncover new business opportunities. In a 1994 IDC survey, IS managers identified four priority areas for data access: accounting and finance, marketing and sales, customer service and manufacturing. Confirming this result, the highest sales for client/server applications are in these areas.

> Business users demand direct access to information in order to make better decisions and to uncover new business opportunities.

Business process change: Organizations are seeking to streamline key business processes. IDC surveys of business and IT leaders show that the three main objectives are: reducing the time to market for delivering new products, improving quality and providing better service to customers. There is a high correlation between organizations seeking business process change and those moving to a client/server architecture.

Requirements for implementation

Can organizations achieve these goals of improved end-user data access and business process change? There are demanding requirements for the new generation of enterprise client/server applications.

The first wave of client/ server applications were smaller scale, departmental systems. In many cases, these systems automated processes that had not been automated previously, such as routing, tracking and distributing documents within a workgroup.

The new wave of client/server applications govern larger scale busi-

ABACUS SOFTWARE • ACCUGRAPH CORPORATION • ACTAMED CORP. • ACTION SYSTEM ASSOCIATES,
ADVANCED CONTROL SYSTEMS • ADVANCED INFORMATION NETWORK SYSTEMS, INC. (AINS) • AFIC TECHNOLOGIES, INC. • AL
AMERITECH HEALTH CONNECTIONS • ANDERSEN CONSULTING • ANDYNE COMPUTING, LTD. • ANSWER SYSTEMS, INC. • A
APPLIED AUTOMATION TECHNIQUES, INC. • APPLIED INFORMATION SCIENCES • APPLIX. INC. • ARBOR SOFTWARE COMPANY •
SYSTEMS • ATEX PUBLISHING SYSTEMS CORPORATION • AURUM SOFTWARE, INC. • AUTO-SOFT CORPORATION • AUTODESK, IN
CORPORATION • AVALON SOFTWARE, INC. • B.A. INTELLIGENCE NETWORKS, INC. • B & W COMPUTER PRODUCTS & SERVIC
SYSTEMS, INC. • BBN SOFTWARE PRODUCTS CORPORATION • BCI HOLDINGS, LTD. • BERKELEY RESEARCH AND TRADING, INC
BLYTH SOFTWARE, INC. • BMC SOFTWARE, INC. • BONNER & MOORE ASSOCIATES, INC. • BORLAND INTERNATIONA
TECHNOLOGY, INC. • BRITE VOICE SYSTEMS GROUP • BROCK CONTROL SYSTEMS, INC. • BUSINESS OBJECTS,
SOFTWARE • CBM TECHNOLOGIES, INC. • CENTERLINE SOFTWARE, INC. • CGI INFORMATIQUE • CIMAGE CORPORATION •
INC. • CLIENTSOFT INC. • CMS/DATA CORPORATION • CODA GROUP PLC • CODA INCORPORATED • COGNOS INCORPORATED
INC. • COMPINFO INC. • COMPUCOM, INC. • COMPUFLEX INTERNATIONAL • COMPUTER ASSOCIATES INTERNATIONAL, I
CORP. • COMPUWARE CORPORATION • COMSHARE • CORNET INTERNATIONAL, LTD. • CRAY RESEARCH, INC. • C
CYBORG SYSTEMS, INC. • DAKOTA IMAGING, INC. • DATA GENERAL CORP. • DATA INTEGRATION INC. • DATA911 • DATABASE EXCE
DATABREEZE, INC. • DATABYTE • DATATOOLS, INC. • DATAWORKS CORPORATION • DAVISCO, INC. • DECISION SOFTWA
SYSTEMS, INC. • DESKTALK SYSTEMS, INC. • DIGITAL EQUIPMENT CORPORATION • DIGITAL TOOLS • DIMENSIO
CORPORATION • DST BELVEDERE • DUN & BRADSTREET SOFTWARE • DYNASTY TECHNOLOGIES, INC. • EAS TECHNOL
TECHNOLOGIES, INC. • EMTEK HEALTH CARE SYSTEMS, INC. • ENGHOUSE SYSTEMS LTD. • ENVIRONMENTAL SYSTEMS RE
ERISCO • EVOLUTIONARY TECHNOLOGIES, INC. • EXCALIBUR TECHNOLOGIES • EXPERT OBJECT CORPORATION • FASTEC
CORP. • FINANCIAL SCIENCES CORPORATION • FINANCIAL SOFTWARE SYSTEMS • FINANCIAL SOLUTIONS LTD • FISHER CONT
FLEXI INTERNATIONAL SOFTWARE, INC. • FNX LIMITED • FORT IGNITION LIMITED • FORTÉ SOFTWARE, INC. • FR
GEAC/COLLIER-JACKSON • GENESYS SOFTWARE SYSTEMS, INC. • GENSYM CORPORATION • GLOBAL SOFTWARE, I
HARBOR SOFTWARE • HARNISCHFEGER ENGINEERS, INC. • HAVERLY SYSTEMS • HBO & COMPANY • HEALTHVISION CORPOR
ENTERTAINMENT SYSTEMS, INC. • HOLISTIC SYSTEMS, INC. • HONEYWELL REGELSYSTEME GMBH • HUMMINGBIRD CO.
INC. • IMRS, INC. • INDUSTRIAL SYSTEMS, INC. • INFINITY FINANCIAL TECHNOLOGY, INC. • INFORMATION ADV
COMPANY • INNOVATECH CORPORATION • INNOVATIVE BUSINESS SOLUTIONS, INC. • INSYN
BROKERAGE TECHNOLOGY, INC. • INTELCOM DATA SYSTEMS, INC. • INTELLIGENT ENVIRONMENTS, INC. • INT
DEVELOPMENT ENVIRONMENTS, INC. • INTERACTIVE SOFTWARE SYSTEMS INC. • INTERFACE DESIGN CONSULTANTS • INTERG
IRI SOFTWARE (DIVISION OF INFORMATION RESOURCES, INC.) • ISA WASHINGTON, INC. • ISICAD, INC. • JTS SYSTEMS • JYACC • K
INC. • KEANE, INC. • KENAN SYSTEMS • KEY INFORMATION SYSTEMS, INC. • KPMG PEAT MARWICK • LANDMARK SYSTEMS • LA
LINGO COMPUTER DESIGN INC. • LINOTYPE-HELL AG • LOGIC WORKS • LUCAS MANAGEMENT SYSTEMS • M5i SYSTEMS INC
ASSOCIATES • MANAGER SOFTWARE PRODUCTS, INC. • MANUGISTICS, INC. • MARKET VISION • MARNER INTERNATIONA
SYSTEMS) • MEASUREX CORPORATION • MERCANTILE SOFTWARE SYSTEMS, INC. • METRIX CUSTOMER SUPPORT SYSTEMS (
MICRO-FRAME TECHNOLOGIES, INC. • MICROSOFT • MICROSOFT CORPORATION • MINICOM DATA CORPORATION • MIQS, INC
MITRATECH • MJS SYSTEMS, INC. • MODATECH SYSTEMS, INC. • MOMENTUM SOFTWARE CORPORATION • MORT
SYSTEMS • NATIONAL INFORMATION BUREAU, LTD. • NATIONAL INFORMATION SYSTEMS, INC. • NATIONAL INVESTOR D
NERTEC DESIGN, INC. • NETWORK APPLICATION TECHNOLOGY, INC. • NEURON DATA, INC. • NEW PARADIGM SOFTWARE CORP
TECHNOLOGY CORPORATION • OACIS HEALTHCARE SYSTEMS, INC. • OAKTREE HEALTH PLAN • OASIS TECHNOLOGY LTD. • OB
SYSTEMS, INC. • ONTOS • ONTOS, INC. • OPEN DATA CORPORATION • OPEN HORIZON, INC. • OPEN LINK FINANCIAL • OPE
OPENVISION • PACER SOFTWARE, INC. • PALINDROME CORPORATION • PANGEA SYSTEMS INC. • PANTTAJA CON
SYSTEMS, INC. • PARK SOFTWARE, INC. • PC DOCS INC. • PDC • PDS • PEOPLESOFT, INC. • PERCUSSION SOFTWARE, INC. • PER
CORPORATION • PERSISTENCE SOFTWARE, INC. • PHOENIX INTERNATIONAL LTD., INC. • PIPESTREAM TECHNOLOGIES, INC. • PL
POPKIN SOFTWARE & SYSTEMS, INC. • POWERCERV CORPORATION • POWERSOFT CORPORATION • PRACTISYS, INC. • PRC •
PREMENOS CORP. • PRINTRAK INTERNATIONAL, INC. • PROACTIVE SYSTEMS • PROFESSIONAL BUSINESS SOLUT
QUADRATRON SYSTEMS INCORPORATED • QUALITY SOFTWARE PRODUCTS • QUESIX SOFTWARE, INC. • QUINT
CORPORATION • READQ SYSTEMS, INC. • RED BRICK SYSTEMS • RED PEPPER SOFTWARE COMPANY • REGIS LTD. • RELATIONAL D
RGTI SYSTEMS/SOFTWARE • ROSS SYSTEMS, INC. • RUGGEDWARE, LTD. • $S^2 I^2$ • SABRE TRAVEL INFORMATION NETWORK •
INC. • SAROS CORPORATION • SARRUS SOFTWARE, INC. • SAS INSTITUTE, INC. • SCOPUS TECHNOLOGY, INC. • SECU
CORPORATION • SIEGELTUCH & ASSOCIATES • SIETEC OPEN SYSTEMS • SKYLIGHT SYSTEMS, INC. • SL CORPORATIO
SOIN, SOLUCIONES INTEGRALES S.A. • SPECTRUM ASSOCIATES, INC. • SPSS INC. • SQL FINANCIALS INTERNATIONAL, INC. •
SOFTWARE • STERLING SOFTWARE, INC. • STORM INTEGRATION, INC. • STR, INC. • STRATEGIC MARKETING INFO
STRUCTURED SOFTWARE SOLUTIONS, INC. • SUNQUEST INFORMATION SYSTEMS, INC. • SYLVAIN FAUST INC. • SYMA
TECHNOLOGIES BUSINESS SYSTEMS, INC. • SYNERGY IMAGING SYSTEMS, INC. • SYSTEMS ENGINEERING SOLUTIONS, IN
TELEKURS AG • TELERATE UK LTD • TERMINAL APPLICATIONS GROUP, INC. • TESSERACT • TEXAS INSTRUMENTS • THE D
GROUP • THE IDEA • THE LEVERAGE GROUP, INC. • THE SYSTEM WORKS, INC. • THE TELEPHONE CONNECTION • THE V
INVESTMENT SOFTWARE • THOMSON SOFTWARE PRODUCTS • TIMECORP SYSTEMS, INC. • TIMELINE, INC. • TIVOLI SYST
TRILOGY • TRIMCO ENTERPRISES • TRINZIC CORPORATION • TV/COM INTERNATIONAL • TXBASE SYSTEMS INC. • UB NETW
SYSTEMS, INC. • UNITRAC SOFTWARE CORPORATION • UNIVERSAL DATA SOLUTIONS, INC. • UNIVERSAL DOCUMENT
VERTEX INC. • VERTICAL TECHNOLOGIES INC. • VIEWSTAR CORPORATION • VISIBLE SYSTEMS
VOICETEK CORPORATION • VYCOR CORPORATION • WALKER DATA SYSTEMS, INC. • WALKER

Outside the U.S. call 410-224-8044. © 1995 Sybase, Inc.

RPORATED • ACUCOBOL, INCORPORATED • ADAC SD&G HEALTHCARE SYSTEMS, INCORPORATED
HMICS, INC. • ALH GROUP INCORPORATED • ALISA SYSTEMS • ALLIANCE DATA SYSTEMS, INC. • ALSYS • AMERICAN TURNKEY
S TECHNOLOGIES INCORPORATED, ENTERPRISE SYSTEMS GROUP • APPAREL INFORMATION SYSTEMS INTERNATIONAL
ITEL SYSTEMS CORPORATION • ASI CORPORATION • ASTEA INTERNATIONAL • ASYMETRIX CORP. • AT&T • AT&T NETWORK
TOMATED MICRO SYSTEMS • AUTOMATED SECURITIES CLEARANCE, LTD. • AUTOMATIC DATA PROCESSING • AUTOSYSTEMS
& W NUCLEAR TECHNOLOGIES BACHMAN INFORMATION
LAND TECHNOLOGIES • BLACK & WHITE SOFTWARE • BLUESTONE
RLAND INTERNATIONAL, INC. BRADLEY COMPANY • BRIO
CABLETRON SYSTEMS, INC. CADRE TECHNOLOGIES, INC. • CAMBAR
NC, INC. • CIRCA INFORMATION TECHNOLOGIES, INC. • CLARIFY
LABORATIVE MEDICAL SYSTEMS COMNETIX COMPUTER SYSTEMS
OMPUTER SYSTEMS ADVISERS COMPUTRON TECHNOLOGIES
ROAD SYSTEMS • CTEXT, INC. CYBERSCIENCE CORPORATION
TION SYSTEMS, INC. • DATABASE PUBLISHING SOFTWARE, INC.
. • DECISION TECHNOLOGIES CONSULTING, INC. • DELTEK
TWARE SYSTEMS, INC. • DISC DOCUMENTUM INC. • DRD
INC. • EDGIL ASSOCIATES, INC. EDICON • EFFIX • EMBARCADERO
H INSTITUTE (ESRI) • EQUIFAX NATIONAL DECISION SYSTEMS
. • FASTECH INTEGRATION, INC. FIDLAR & CHAMBERS • FILENET
FISHER-ROSEMOUNT SYSTEMS, INC. • FISONS INSTRUMENTS, INC.
TECHNOLOGY CORPORATION FULCRUM TECHNOLOGIES, INC.
REAT PLAINS SOFTWARE • GSI INDUSTRIE • GUPTA CORP
• HEWLETT-PACKARD • HILCO TECHNOLOGY, INC. • HILL ARTS &
NICATIONS LTD. • IDX SYSTEMS CORPORATION • IMAGE SCIENCES,
E, INC. • INFORMATIONVIEW, A PERFORMANCE TECHNOLOGIES
FTWARE CORPORATION INTEGRAL • INTEGRATED
ENT OBJECTS CORPORATION INTELLUTION, INC. • INTERACTIVE
ORPORATION • INTERNATIONAL SOFTWARE SOLUTIONS, INC. • INTERSOLV
SOFTWARE, INC. • KASE SYSTEMS KB SYSTEMS, INC. • KCI COMPUTING,
SOFTWARE • LBMS, INC. • LEGAL IMS, INC. • LEVEL 8 SYSTEMS INC.
DONALD COMPUTER SYSTEMS MANAGEMENT SYSTEMS
• MCCUE SYSTEMS, INC. • MDIS (MCDONNELL INFORMATION
• METROPOLIS SOFTWARE, INC. MGV AMERICA INC. • MICRO FOCUS
SSION SYSTEMS, INC. • MITCHELL HUMPHREY & CO. • MITI
FLEX SYSTEMS, INC. • MOTEK INFORMATION SYSTEMS, INC. • NAT
RVICES, INC. (NIDS) • NATURAL LANGUAGE, INC. • NAVISOFT
I, INC. • NUCLEUS DATA SYSTEMS NUMETRIX, LIMITED • NUWARE
VE: INC. • OCEANIA, INC. • ODESTA SYSTEMS CORPORATION • OIL
SYSTEMS/DIVISION OF MICRO PLAN DEVELOPMENT, INC.
NG GROUP, INC. • PARALOGIX CORPORATION • PARC PLACE
NE SYSTEMS, INC. • PERFORMIX, INC. • PEROT SYSTEMS
ROTHERS SOFTWARE • PLATINUM SOFTWARE CORPORATION
SION SOFTWARE, A DIVISION OF LOGICA NORTH AMERICA
, INC. • PROGRESS SOFTWARE CORPORATION • Q & E SOFTWARE
ORPORATION • RAM SYSTEMS DEVELOPMENT • RAMCO SYSTEMS
STEMS • REMEDY CORPORATION RENAISSANCE SOFTWARE INC.
S TECHNOLOGIES • SALESBOOK SYSTEMS • SARATOGA SYSTEMS,
INC. • SEEC INC. • SELECTSTAR SERVICESOFT • SES, INC. • SEXTANT
MS • SOFTWARE ENGINES, INC. SOFTWARE OF THE FUTURE, INC.
YSTEM SOFTWARE ASSOCIATES) STATWARE, INC. • STERLING
ON, INC. (SMI) • STRUCTURED COMPUTER SYSTEMS, INC.
CORPORATION • SYNERGISTIC SOLUTIONS, INC. • SYNERGISTIC
STEMS UNION INCORPORATED TECHNOLOGY APPLICATIONS, INC.
PMENT GROUP FOR ADVANCED TECHNOLOGY, INC. • THE DODGE
E CORPORATION • THIRD WAVE TECHNOLOGIES, INC. • THOMSON
NC. • TOTAL SYSTEM INTEGRATORS, INC. • TPG FINANCIAL SYSTEMS, INC. • TRAVELNET, INC. • TREGO SYSTEMS • TRG, INC.
• UES, INC. KNOWLEDGE INTEGRATION CENTER • UNIFACE • UNIFY CORPORATION • UNISQL, INC. • UNITEQ APPLICATION
GEMENT SYSTEMS INC. (UDMS, INC.) • UPTICK TECHNOLOGIES, INC. • US DATA • VALMET AUTOMATION • VERITY, INC.
RPORATION • VISIGENIC SOFTWARE, INC. • VISUAL NUMERICS, INC. • VMARK SOFTWARE, INC.
RACTIVE SYSTEMS • WALL STREET CONSULTING GROUP, INC. • WANG LABORATORIES • WILCO

Some relationships aren't meant to be monogamous.

In today's business world, no one vendor can solve all your needs. Which is precisely why Sybase offers solutions from literally hundreds of leading application developers and systems integrators. So you can choose the best products for you—not the products someone else says are best. And you're free to change as your business changes. For a free CD-ROM directory of our Open Solutions Partners, call 1-800-SYBASE-1 ext. 1218. And see for yourself how a relationship with Sybase is anything but confining.

SYBASE®

The Architecture for Change™

ness operations, such as accounting, sales and marketing, and manufacturing. Unlike the first wave, these processes, such as accounting and human resources, have long been automated. Organizations are migrating from older mainframe-based systems that do not provide the needed flexibility for supporting business process change and end-user data access. The new requirements for enterprise client/server applications include:

Scalability: These are core transactional applications. They must be robust, capable of scaling up to handle hundreds or even thousands of distributed users simultaneously updating a database. The applications must ensure good performance and continued data integrity as usage increases.

Support for Application Integration: Business process change implies the ability to define new processes that span formerly separate business functions. These processes cross major boundaries such as accounting and finance, sales and marketing, and manufacturing. However, existing applications typically were written to support the work of a single major functional area. Migrating to enterprise client/server requires the ability to link a new packaged application with another package or with an existing custom-built application. Application packages will need to support external links using advanced middleware such as message queuing, remote procedure calls and object brokering.

In the future, a vendor's network of alliances, rather than its product investment, will become its major defense against potential competitors entering the market.

Support for Data Integration: End-user data access requires an integrated view of separate application databases, in terms familiar to the business user. Data warehousing provides an opportunity to transform new and existing sources of data in accordance with a consistent data model. Enterprise client/server applications should directly support this transformation. New PC-based data access tools must then be mapped to data in the warehouse or to specialized multi-dimensional databases to provide a higher level business view for end users.

Alliances: the critical success factor

Successful implementation of enterprise client/server applications requires the integration of diverse technologies, including multiple application packages, operational and decision support databases, and data access tools. In fashioning a solution, organizations can purchase each part separately in the client/server marketplace. This freedom of choice for organizations to select elements of a solution from multiple suppliers has defined **open** client/server computing.

But the challenges and the range of skills and expertise required to build a solution from the raw building blocks are daunting. **No single organization, no matter how large, can resolve all the issues alone.** Partnering to put together a solution is the only viable alternative. Thus an organization's portfolio of partners or alliances becomes the critical success factor for implementing client/server.

The application ecosystem

Just as organizations implementing client/server are realizing the significance of partners, suppliers of open client/server technology are recognizing the value of alliances. **No single supplier, no matter how large, can provide a total solution alone.** It is in the interests of client/ server technology suppliers to form alliances so they can deliver more value to their customers.

This is good news for organizations, as they are increasingly able to purchase integrated combinations of applications and related software. These **integrated platforms** are created through alliances, either directly between software vendors or indirectly through VARs and systems integrators.

Application vendors have made their core applications competitive by building up functionality, moving to a client/server architecture and packaging applications as integrated suites. Now these vendors are looking for new ways to

YOU'RE
THE CLIENT.

WE'RE
THE SERVER.

A simple statement of our philosophy.

It's how we go about business, whether you're using a mainframe, a client/server system, or a combination of both. We want to make your goals our own. So we're there with you, not just delivering software, but helping you use it to make better, faster decisions. Make us prove it — after all, you're the client. Call us at 1•800•290•7374, extension 765, or reach us on the Internet: solutions@dbsoftware.com.

Dun & Bradstreet Software

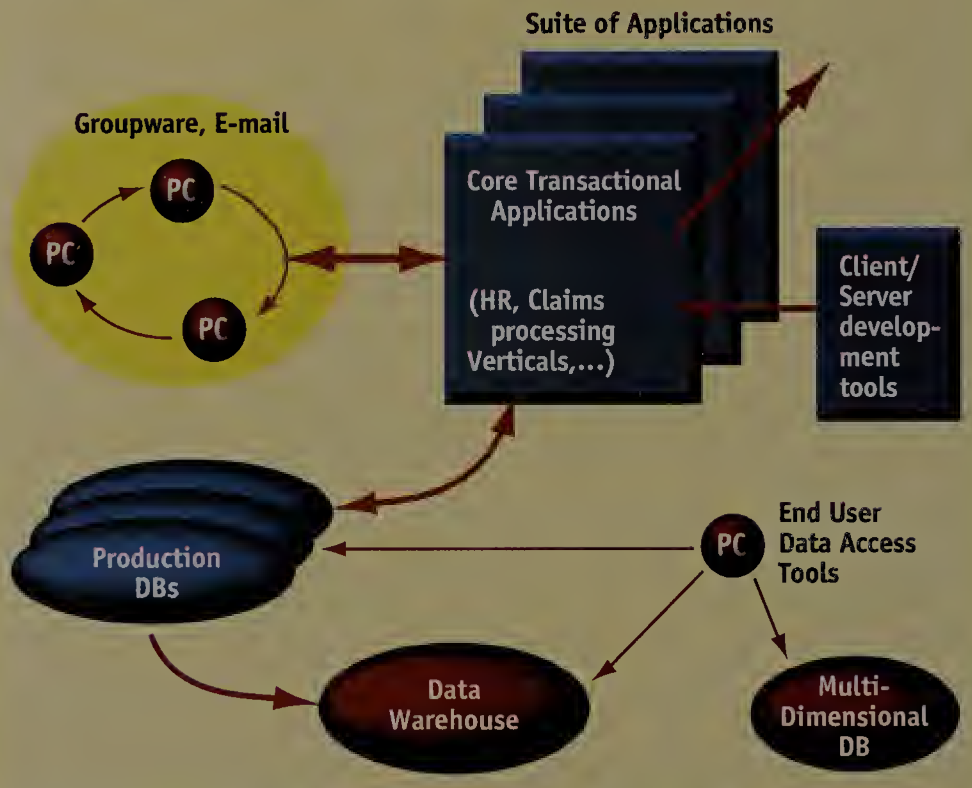
FINANCIALS HUMAN RESOURCES MANUFACTURING DECISION SUPPORT

differentiate their applications for competitive advantage. They are partnering with vendors in software segments such as groupware, data warehousing and decision support tools for **value-added support.**

Groupware can be linked to core transactional applications to improve the way data is entered and the way information is distributed. Data warehousing and related decision support tools add value by improving end-user access to information.

Software vendors in areas complementary to applications, such as end-user data access, are looking to application vendors to be **additional channels of distribution** for their products. The combination of application vendors seeking added value and vendors of complementary software seeking channels is likely to result in more and more relationships being forged along these lines. These relationships form an **application ecosystem,** as shown in the figure at right.

The Application Ecosystem


Suite of Applications
Groupware, E-mail
PC
PC
PC
Core Transactional Applications
(HR, Claims processing Verticals,...)
Client/ Server development tools
Production DBs
PC
End User Data Access Tools
Data Warehouse
Multi-Dimensional DB

The application ecosystem shows interdependence among core applications and several complementary software segments. *Source: IDC*

The application ecosystem shows interdependence among core applications and several complementary software segments. Think of the application ecosystem as a model of potential software vendor-vendor relationships. Software vendors in the areas noted in the figure are dedicating greater resources to build alliances. In the future, a vendor's network of alliances, rather than its product investment, will become its major defense against potential competitors entering the market.

Applications and data warehousing are two points at which relationships in the application ecosystem converge, representing solution areas that organizations look to buy. This reflects the fact that application vendors and data warehouse packagers (such as database vendors) are driving the formation of networks of alliances. Vendors who can bring together related software products and technologies as **integrated platforms** provide real added value to their customers and gain credibility as solution providers.

Conclusion

Organizations implementing client/server are beginning to recognize the importance of alliances. In selecting a vendor, the quality and breadth of a vendor's network of alliances will be as important as the base technology delivered by the vendor.

Moving to enterprise client/server applications involves more than purchasing and installing a package. There are related software technologies that must be brought together to form a solution. As vendors take more responsibility for the integration of related client/server technologies, organizations have less complexity to deal with. Purchasing **integrated platforms** greatly improves an organization's chances for migrating to and implementing enterprise client/server applications successfully.

WIN THE RACE TO CLIENT/SERVER MANUFACTURING WITH POWERMAN™

PM
POWERMAN

READ ALL ABOUT IT

Why run with outdated systems that can make even the best manufacturing operation fall behind the pack? Take control with PowerMAN™.

This new, integrated, client/server manufacturing system eliminates the paper trail, streamlines your entire operation, encourages communication, as well as increases productivity.

PowerMAN is based on "Best in Class" graphical client/server computing. It incorporates PowerBuilder™, Sybase SQL Server™, and Microsoft Windows™ graphical user interface (GUI) for its underlying architecture to accommodate unparalleled scalability and flexibility. Unlike other solutions, PowerMAN is both affordable and available today.

The integrated modules of PowerMAN provide timely information that will empower all users. This paperless technique transforms data into real-time information for improved decision support and profit.

Call (813) 226-2378, or FAX (813) 222-0886 for your free brochure on the PowerMAN system. It's plant-proven power that puts you in the winner's circle.

POWERMAN™
Manufacturing Power for the Future—*NOW*

Also ask about our complete offering of PowerBuilder business applications for Sybase: accounting, order management, help desk, sales force automation.

PowerCerv™
Leading the Migration to Graphical Client/Server Computing

PowerMAN is owned and licensed by the DODGE® Group of Reliance Electric Company. PowerBuilder is a product and is copyrighted from PowerSoft Corporation. Sybase SQL Server is a product from Sybase Inc. Microsoft Windows is a product from Microsoft Corporation.

SYBASE®
OPEN SOLUTIONS™ PARTNER

Client/server applications in the distributed enterprise

Enterprise client/server applications can make the difference between surviving or thriving in today's rapidly changing business climate. But what kind of IT foundation do these packages need?

BY DAVID SOHM

Vice President of Channels and Partner Marketing, Sybase, Inc.

TODAY, the so-called "glass house" is more like a hothouse. Business is brutal. In many markets, how well a company does depends on how intelligently it deploys information technology.

Many leading-edge businesses are using information technology to get closer to their customer — understand customer requirements, design better products, get to market faster. These companies are deploying a new generation of *enterprise* client/server applications that enable the new, more effective cross-department business processes by delivering information to the right person, at the right place, at the right time.

Enterprise applications can help employees make the most of a company's information assets. But to do so, these applications must utilize the full power of the underlying technology to access, move, and manage information. There are three attributes to look for when selecting a human resources, accounting, or manufacturing application: Can it distribute data to key people in your business regardless of location? Does it integrate departments in collaborative ways of working? Is it flexible in meeting your unique and changing business requirements?

More data to more people

Distributed applications provide more people access to more data. Traditionally, data has been sequestered within departments, taking data in but rarely giving it back in the form of useful information. For instance, do you ever feel like you work for the accounting department, feeding their systems in ways that make sense to them, but not to you? The new generation of distributed financial software packages makes it possible for a company's decision makers at all levels to get the financial information they need to make better business decisions.

Bridges between departments

Integrated applications streamline business processes between departments. At one level, this can reduce errors and costs by eliminating duplicated efforts. At a more strategic level, it can enable proactive business activities through well-placed, timely and useful information. In manufacturing, for example, by linking order entry with the manufacturing resource planning functions, companies can automate purchasing to minimize inventory costs.

Flexible applications = flexible business

U.S. companies spent nearly $32 billion on changing their business processes in 1994, with varying results. Most companies now recognize the value of evolutionary (versus revolutionary) change. Flexible enterprise applications let you to change as your business changes. They let you select the best application modules for new business functions knowing they will work with the systems you have, without rewriting vast amounts of code, converting tons of legacy data, or junking incompatible hardware.

Selecting the right foundation

You want superior application functionality to help run your HR, accounting, or manufacturing departments, but you also want to link these departments in new, decentralized but collaborative ways of working. This requires two sets of criteria for evaluating enterprise client/server applications; the functional checklist that guides your choice of applications, and the capabilities you'll need from the underlying client/server technology. Consider the following when evaluating a client/server foundation:

Distribute and synchronize data. The ability to replicate data throughout multiple sites is critical in large, diverse or global organizations. Are the replication features of your client/server software robust enough to allow transaction-level updates across the network to and from most popular databases? Is it robust enough to quickly accommodate new users and new business conditions without rewriting the application logic? Will it recover automatically when (not if) the network fails?

Connect with mobile users in faraway places. With more of your users and customers relying on mobile devices, you'll need to consider how to distribute data in an "occasionally connected" network. Is your client/server framework going to support message-based information retrieval and data replication without requiring any re-work of your applications?

Access to legacy data. It's a fact: 70% of corporate data is still stored in mainframe databases. An organization moving to client/server can't expect to suddenly migrate years' worth of data to the new environment. Does your client/server framework provide open APIs, high performance gateways, and bi-directional read and write capability so that your applications can transparently incorporate all your legacy databases in a transaction-oriented business environment?

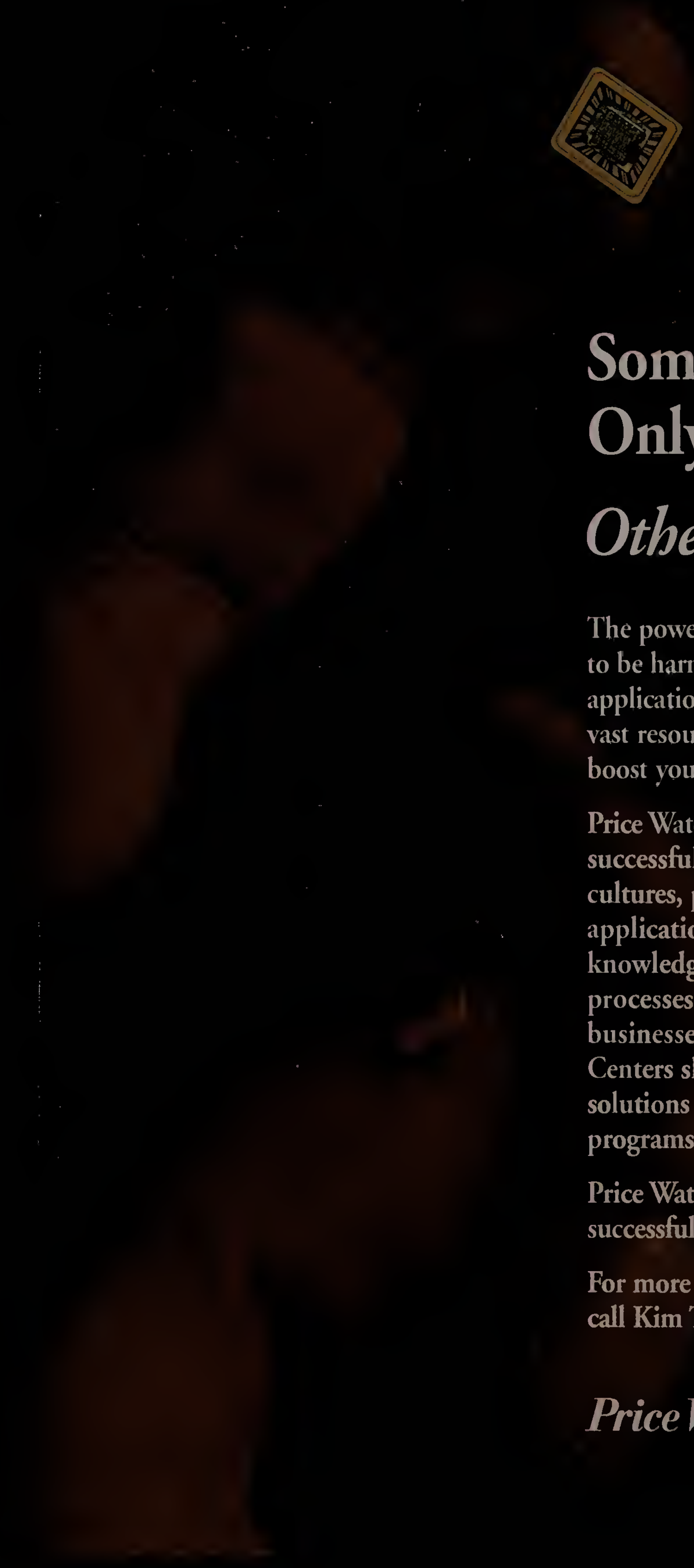
Support for team-based business processes. New generation applications take the view that not only do you need good data, but you need to get it to the right people at the right time, according to how they actually work together. It sounds simple, but consider the technological implications of ensuring that as each business event changes the underlying data, other users can act immediately on this new information — even if they're a field rep accessing the system from a palmtop. Is the client/server technology flexible enough to let you make on-the-fly changes to automated work routing or business rules as you discover backlogs in the work-in-progress or make changes to your processes?

Mainframe-class security and systems management. If the application is to be deployed across multiple departments throughout the enterprise, the need for security is paramount. Do both the application and the underlying client/server foundation work within your chosen management framework so you can manage the application within a unified environment?

Data warehousing. Companies in data intensive industries, like insurance or banking, can often be information poor. Does your client/server foundation provide you with indexing capabilities that let you ask what-if interactive questions quickly and easily, and open database gateways that let you pull data into your warehouse from any of your operational systems, regardless of physical location or data format?

Conclusion

By combining the proper distributed client/server architecture with best-in-class enterprise applications, organizations can not only improve departmental processes but fundamentally change the way they do business. This change can be accomplished gradually and safely if you choose a technology foundation that gives you open access to your existing systems, the ability to "plug in" new applications as your business needs evolve, and helps you distribute needed data to the far corners of your enterprise quickly and reliably.



Some See Client/Server Only As Technology…

Others As Results

The power of client/server technology — just beginning to be harnessed. But properly used with the right business applications and tools, client/server technology can deploy vast resources at employees' fingertips. Resources ready to boost your company's competitiveness in the marketplace.

Price Waterhouse Management Consulting Services devise successful enterprise-wide implementations. We blend cultures, processes and systems, corporate structures, and applications and tools with enabling technologies. Our knowledge brings clients results. We know technology, processes, change management, products — and how businesses work. Our Advanced Software Engineering Centers show clients real-world examples of how to craft solutions that produce results. And provide "fast start" programs to meet tight implementation schedules.

Price Waterhouse helps top companies world-wide attain successful client/server enterprise-wide results.

For more information on how we can help you, please call Kim Treaster, 1-800-792-7856.

Price Waterhouse LLP

OBJECT WORLD

bjects In Action 1995

UPDATE

№ 11

nd the winner is...everyone who comes o Object World!

o you know who's developed the world's best end-user applications using OT? nd out during Computerworld's Object Application Awards Ceremony at Object 'orld San Francisco.

This must-be-there event will be hosted by industry luminaries Steve Jobs of eXT Computer and Gary Beach of *Computerworld*. And it takes place on 'ednesday, August 16, at 6:00 p.m., followed by a reception sponsored by IBM.

This is your chance to see how OT's pacesetters are achieving extraordinary isiness results by putting object technology to work in real-world applications. And scover why so many companies are racing full speed ahead into object technology.

Of course, this is just one reason to head or Moscone Hall, August 15-17.

COMPUTERWORLD

Object Application

AWARDS

on't miss the Distributed pplications Showcase.

OT the best way to build distrib-ted applications? Object World khibitors think so. And they're will-ig to share their latest tools, services and customer pplications with you. Be there to see firsthand ow leading companies approach the challenge of uilding distributed applications. And see the OMG CORBA 2.0 pecifications in action for the first time. Learn from those who are utting OT to work right now!

et a FREE Exhibits Pass.

Vhether you sign up for the full Conference Program or take dvantage of our offer for a FREE Exhibits Pass, you'll walk away winner at Object World San Francisco.

Your FREE Exhibits Pass is your ticket to see hundreds of new roducts and services firsthand. Attend seminars put on by Object Vorld exhibitors and the OMG. And hear keynote addresses by ndustry leaders like Colin Cook of Citibank and Dr. Gerald Held of Dracle.

You'll also get a FREE Program Guide and Buyers Directory, a *Distributed Computing with Objects* diskette, and valuable coupons ou can redeem for products and services—only at Object World.

That's all in addition to the Live Distributed Applications Showcase and the Object Application Awards Ceremony! Plus the California Wine Tasting Reception!

Object World San Francisco is definitely a win-win proposition.

HOW TO REGISTER:

BY PHONE: Call us toll free at 1-800-225-4698 (in U.S.) or 1-508-879-6700.

BY WORLD WIDE WEB SERVER: Address: http://www.omg.org Select: Object World San Francisco.

BY E-MAIL: Send to: OMG@OMG.ORG. Type the word "help" by itself in the body of your letter, and the server will send you complete instructions. To receive a list of available files, type the word "index" on a separate line.

GET THE OBJECT WORLD FACTS BY FAX!

Call our 24-hour automated fax system at 800-486-9808 and request the following extension for up to the minute information:

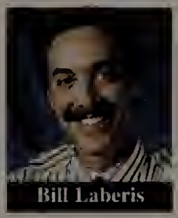
Bonus Sessions	Ext. 496
Exhibitor Seminars	Ext. 496
Tutorials	Ext. 494
Conferences	Ext. 495
Book Signings	Ext. 497

Computerworld recommends Object World!

"Object World San Francisco has fast become the largest all-OT show in the nation, and it's truly your best forum for learning how to make the most of object technology. If OT is important to your organization or your career, Object World is the place to be.

"For the fourth year, we're proud to sponsor Computerworld's Object Application Awards Ceremony honoring the world's best uses of object technology. We hope to see you there to applaud the winners!"

Bill Laberis



Bill Laberis

HOURS AT A GLANCE

Exhibit Hall Hours:		
Tuesday	August 15	11:00 a.m.- 6:00 p.m.
Wednesday	August 16	11:00 a.m.- 6:00 p.m.
Thursday	August 17	10:00 a.m.- 2:00 p.m.
Wine Tasting Reception:		
Tuesday	August 15	5:00 p.m.- 6:00 p.m.
Application Awards Ceremony: **Reception sponsored by IBM**		
Wednesday	August 16	starts at 6:00 p.m.

Object World is sponsored and produced by:

OMG
OBJECT MANAGEMENT GROUP

COMPUTERWORLD
The Newspaper of IS

IDG

For FREE admission:

Call 800-225-4698, ext. 11 or World Wide Web Server: Address: http://www.omg.org Select: Object World San Francisco

[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] & [illegible] Softw[illegible]
[illegible]
[illegible] C[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] *Review*
[illegible]
[illegible]
Co[illegible]

Dr. Dobb's Journal
Expersoft Corporation
Extended Intelligence
F[illegible]z, Inc.
Fujitsu Limited
GemStone Systems, Inc.
Genesis Development Corporation
Hewlett-Packard
Hitachi America Ltd.
IBM
IEEE
ICON Computing, Inc.
ICL
ILOG, Inc
Informix Software
InfoWorld
Instruction Set
[illegible] Corp

Interactive Development Environments
Intersolv
Iona Technologies Ltd.
Isis Distributed Systems
John Wiley & Sons, Inc.
KaPRE Software, Inc.
Knowledge Systems
Lighthouse Design
Lockheed Martin Corporation
Logiscope Technologies, Inc.
Mark V
Mark Winter & Associates Inc.
Matra Datavision
MetaWare Incorporated
Micro Focus
Microsoft Systems Journal
Miller Freeman, Inc.
Naval Undersea Warfare Center

NetLinks Technology Inc.
Network World, Inc.
Neuron Data
NeXT Computer, Inc.
Object International, Inc.
Object Management Group, (OMG)
Object-Oriented Strategies
The Object People
Objectivity, Inc.
Objectory Corporation
ObjectSpace, Inc.
Open Engineering
OpenSource, Inc.
OS/2 EXPRESS
ParaSoft
ParcPlace Systems, Inc.
PC AI
Persistence Software, Inc.

POET Software Corporation
Popkin Software & Systems, Inc.
PostModern Computing Technologies, Inc.
Powersoft Corporation
Prentice Hall
Proforma Corporation
ProtoSoft, Inc.
Ptech
Rational Software Corporation
Rogue Wave Software
Segue Software, Inc.
Semaphore
Servio Corporation
SES
SIGS Publications
Software Development
Software Futures
Software Magazine

Stanford Management Group
SunSoft Inc.
TakeFive Software
Taligent, Inc.
Technical Resource Solutions
Teknekron Software Systems, Inc.
Texas Instruments
Tom Sawyer Software
UniSQL, Inc.
UNISYS
VMARK Software
Walnut Creek CD-ROM

Distributed Applications Showcase partcipants are shown in boldface.

As of July 24, 1995

pecial tha[illegible] Gold Rush Sponsors for making Object World the most successful all-OT event in the world.

SunSoft Taligent. digital EXPERSOFT IBM NeXT UNISYS INFORMIX

DISTRIBUTED APPLICATIONS FOR THE REAL WORLD

OBJECT WORLD

AUGUST 15-17
SAN FRANCISCO

Call 1-800-225-4698, ext. 11, for your FREE admission.

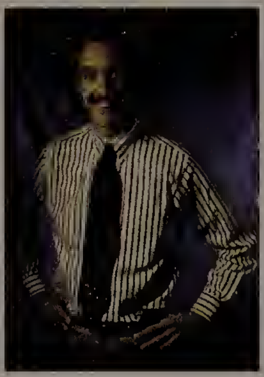
Editorial

Justice served

In an unusual display of reason, the Justice Department wisely decided to leave the system of free enterprise intact last week when it chose not to challenge Microsoft's plans to launch its on-line network with Windows 95 on Aug. 24.

This means the Big Three in on-line services — America Online, Prodigy and CompuServe — will have to engage in aggressive cost-cutting and service enhancement to compete with a new low-cost service provider.

Pity the poor customer who will have not only a choice of provider but also continuous cost reductions and better services.



Dang that competition!

Microsoft's soon-to-be competitors have nothing to fear but fear itself (as well as the loss of oligopoly power). I think that much, at least, was yielded by the survey results we posted this week (see story, Cover 1).

We polled only Windows 95 beta customers, half of whom agreed that the inclusion of an on-line service in Windows 95 gives Microsoft an unfair advantage over the competition. But seven in 10 of those same people plan either not to use The Microsoft Network or to use it while continuing to use the other services.

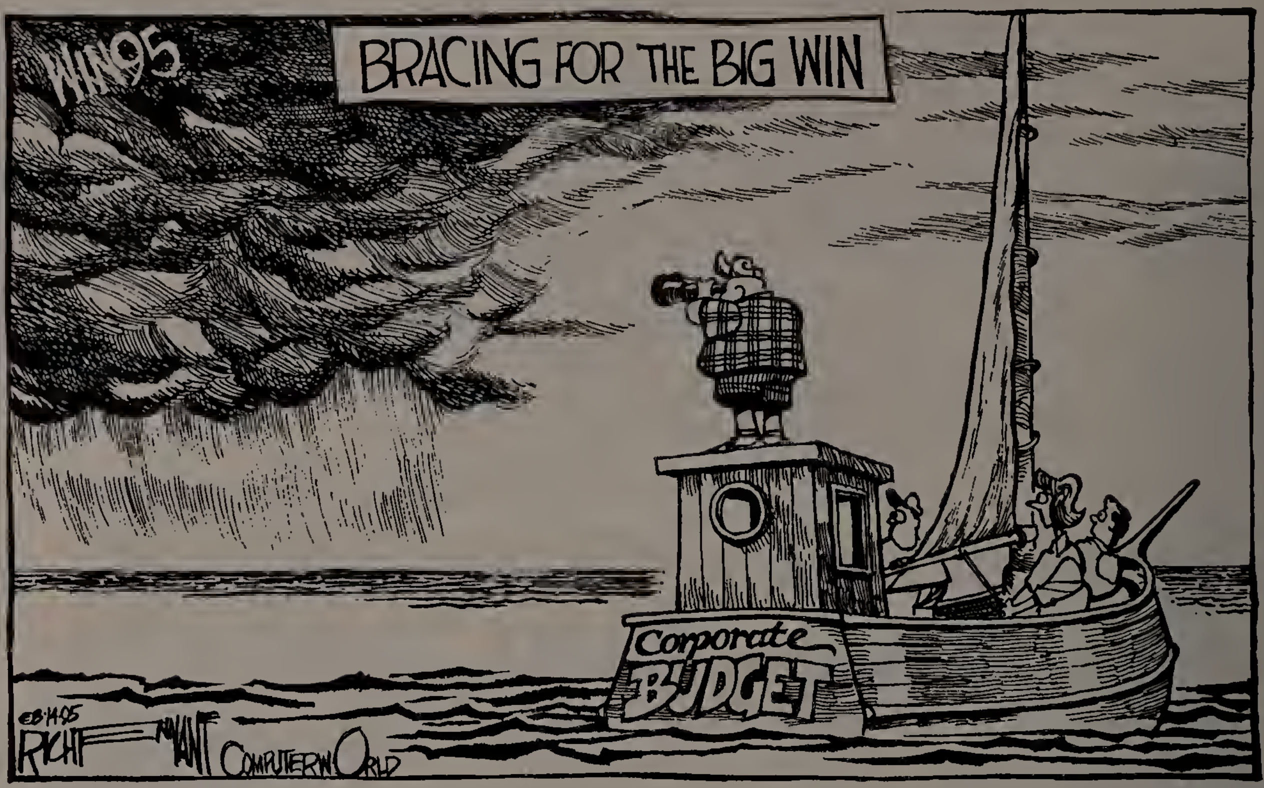
But the most blatant proof that competition in the on-line world is alive and well was last week's initial public offering of Netscape Communications, which makes an Internet World Wide Web browser. Microsoft will include a Web browser in its network offering. Did that scare investors?

Well, Netscape, with six-month sales of a mere $16 million and not even a nickel of profit, had a market value of more than $2 billion after the stock went on sale. You think Netscape or the investors are afraid of Microsoft?

So let's credit the Justice Department in this case for doing the right thing. Perhaps it will set its sights on more deserving targets in the future and let free markets be.

Bill Laberis

Bill Laberis, *Editor in chief*
Internet: *blaberis@cw.com*



[illegible]

Already there

"Workflow stock on the rise with Novell entree" [CW, July 17] gives the mistaken impression that IBM is not yet a player in the workflow arena: IBM's FlowMark has been generally available for more than a year. It supports servers on OS/2 and AIX and clients on OS/2, AIX and Windows. FlowMark is a pure workflow engine that competes well with any other offerings available today.

John McDonald
Neshanic Station, N.J.
jmac@tsb.weschke.com>

A different face

I was amused by Jeffrey Henning's column, "IBM/Lotus cornered but still dangerous" [CW, July 10]. He says, "Imagine that for $99 you could buy OS/2 with Lotus' SmartSuite built in.... Face it, the word processor, spreadsheet, presentation package and database belong in the operating system."

I wonder how Mr. Henning would react to the following statement: "Imagine that for $99 you could buy Windows 95 with The Microsoft Network built in. Face it, on-line services belong in the operating system."

Kurt G. Schumacher
Boulder, Colo.
Kurt_Schumacher@
stortek.com>

Chipping in

"Survival of the fittest" [CW, July 10] states that "one advantage still held by RISC chips such as Sun's SPARC, Digital's Alpha and Silicon Graphics' MIPS chips is their upcoming move to 64-bit operating systems by the late 1990s."

Digital has offered a 64-bit implementation of Unix since 1993. In Version 3.2, Digital Unix running on Digital's 64-bit AlphaServer 8400 and coupled with a 64-bit implementation of Oracle7 allows in-memory databases of 10G bytes and beyond.

Eric Schoeniger
Horsham, Pa.
SCHOENIGER@elvis.
cardinal.com

Invasive mining

"Drug errors heighten need for IS Rx" [CW, July 10] failed to even mention patient privacy as a possible reason for doctors' resistance to automation.

Electronic networks can be notably lacking in privacy, and the data can be misused. An example is the invasive use of banking information, adventurously termed "data mining."

While I understand that the intentions are not to imply ethical violations, a more balanced view of general, noncomputing fields should be presented. The doctors are presented negatively, "resisting change," while the "data miners" take information given for one purpose and use it for other, self-serving purposes. This may be inappropriate for much medical information.

Something that makes good business sense isn't always the right thing to do. The privacy of medical information is paramount to many.

Cheri Chenoweth
Urbana, Ill.
cchenowe@ux1.cso.uiuc.

Bad idea

I'm not sure regulating smut on the Internet really is "a worthy endeavor" ["'net losses," CW, June 26]. Your employee whose 9-year-old downloaded nude photos is as responsible for his daughter's fender bender on the info highway as he would be if he had handed her the keys to the Ford and she had slammed into my Chevy.

My kids range in age from 6 to 12, and they use the Internet — but they do it off the highway with an off-line newsgroup reader. What actual real-time access they have is under supervision and with a firm set of ground rules.

It's not difficult to lock out access to undesired newsgroups, Web pages or images. Your saying that the rest of us must conform to your personal limitations is a disservice.

Once smut and violence go, a ban on fraud would eliminate most political discussions and just about every press release in the computer industry. It's a Pandora's box that must be hammered closed.

Keith Wood
Cottonwood, Ariz.
keithw@sedona.net

■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

COMPUTERWORLD

Editor in Chief
Bill Laberis
Editor
Paul Gillin

News Editor
Maryfran Johnson
Technology Evaluations Editor
James Connolly
Sections Editor
Johanna Ambrosio
Assistant News Editor
Patricia Keefe
Assistant Sections Editor
Michael Fitzgerald
Technical Editor
Charles Babcock
Senior Editors
Craig Stedman, Large Systems
Rosemary Cafasso
Client/Server Software
Laura DiDio, Networking
Elizabeth Heichler
Application Development
Bob Wallace
Internetworking
Mid-Atlantic Bureau
Thomas Hoffman, User Strategies
Julia King, Management
Cheryl Gerber, PC Software
Washington, D.C., Bureau
Mitch Betts, Social & Legal Issues
Gary H. Anthes, Government & Security
West Coast Bureau
Jean S. Bozman, Open Systems
Kim S. Nash, Databases
Steve Moore, Storage Management
Lisa Picarille, PC Software
Pacific Northwest Bureau
Stuart J. Johnston, PC Operating Systems
Southwest Bureau
Patrick Dryden, Network Management
Senior Writers
Jaikumar Vijayan, Neal Weinberg,
Mindy Blodgett, Michael Goldberg
West Coast Bureau
Suruchi Mohan
Staff Writer
Tim Ouellette
New Products Writer
Stewart Deck
Graphics Coordinator
Stefanie McCann

Features Department
Senior Editors
Joseph Maglitta, Corporate Strategies
Lory Zottola Dix, In Depth
Allan E. Alter, Management
Kathleen Gow, In Depth
Associate Editors
Jodie Naze, Careers and Marketplace
David B. Weldon, Management
Cathleen Gagne, CW Guide
Senior Researcher
Kevin Burden, Firing Line/Scorecard

Special Projects Editor
Bruce Rayner
Managing Editor, Special Projects
Joyce Chutchian-Ferranti

Senior Research Manager
Bob Fink
Research Analyst
Laura Hunt
Fluegelman Intern
Amy Malloy

Chief Copy Editor
Anne McCrory
Assistant Chief Copy Editor
Christina Aicardi Maguire
Senior Copy Editors
Kimberlee A. Smith, Ellen Fanning
Michelle J. Keyo
Copy Editors
Kimberly Gilliard, Jay F. Rizoli
Michelle Grabon, Roberta A. Fusaro

Design Director
Tom Monahan
Senior Graphic Designers
Nancy Kowal, Mitchell J. Hayes
Janell Genovese
Graphic Designers
Mary Beth Welch, David Waugh
Cartoonist
Rich Tennant

Office Manager
Linda Gorgone
Editorial Assistants
Lorraine Witzell, Connie Brown
Aleksandra Skulte
West Coast Bureau: Chris Flanagan

Computerworld Client/Server Journal
Alan Alper, Editor
Catherine McCrorey, Managing Editor
Mary Brandel, Senior Editor
Stephanie Faucher, Graphic Designer

Electronic Marketplace Liaison
Lisa Davidson

Rights and Permissions Manager
Sharon Bryant

Main Editorial Office
Box 9171, 375 Cochituate Road
Framingham, Mass. 01701-9171
(508) 879-0700; TDD: (800) 428-8244
MCI Mail: 279-6273
CompuServe: 76537,2413
Subscriptions: (800) 669-1002

For more information on how to contact *Computerworld* editors, see page 116.

More service, less whining

Gary J. Beach

Dear Steve:

As Aug. 24 approaches, I suggest you borrow a page from John Wooden's coaching book: Make a fast break for the score!

All those years that Wooden led UCLA to national basketball championships, he rarely scouted the competition. Wooden's theory: If his players executed their game plan, it really didn't matter what the competition did.

Steve, since last fall you have focused too much energy on the competition, Microsoft, and not enough on your players, America Online customers. While Microsoft developed its on-line service, you whined about its business practices, yet you still had enough time to star in that Gap jeans advertisement. Where are your priorities?

As an AOL subscriber, I am tired of reading your monthly litany of excuses for why this feature or that is continually delayed. I am tired of seeing every magazine known to mankind offer AOL subscriptions, knowing that will hinder *even further* my efforts to connect to your service. I am tired of waiting six seconds or more to disconnect from an AOL session.

Now I learn about a lawsuit where users claim AOL charges for a *full extra minute* on the network even if the session lasts only one second beyond the previous minute. Hey, Steve, have you been ripping me off?

A pull-no-punches open letter to Steve Case, chief executive officer of America Online, Inc.

Success in the technology business is spelled C-U-S-T-O-M-E-R. Make your customer more successful and you become more successful. Actions speak louder than words. Your recent actions say to me that the AOL customer is not high on your list of priorities.

Rather than focusing on enhancements for AOL, you've been leading a lobby against The Microsoft Network on Capitol Hill, with CompuServe and Prodigy in tow. Who is your customer? The 535 members of Congress or the millions of people registered with AOL? Your shallow attempt to be the Ralph Nader of on-line services is embarrassingly self-serving.

This is the bottom line: You will have to compete, sooner or later, with The Microsoft Network whether or not the Justice Department uncouples it from Windows 95. Anne Bingaman can't wave a magic wand and make it go away.

Maybe it's time to tell the world the *real* reason you're so concerned about Microsoft: Your business model depends on attracting marginally interested new subscribers. You lure them with "10 free hours" and then charge $9.95 a month for five hours of access — knowing full well the average subscriber connects for less than 2.5 hours per month.

Tell your customers the truth: The majority of your profits come from "unused" connect time, and the reason you fear The Microsoft Network so much is that its launch will dry up your fishing hole of potential new subscribers.

America was built on classic marketing battles: AT&T vs. MCI, Coke vs. Pepsi, McDonald's vs. Burger King. Competition is good. When truly significant new products such as Windows 95 arrive, all boats rise with the tide. Take advantage of Windows 95. You should be writing thank-you letters to Bill Gates for increasing the size of your market. The golden days of AOL are ahead of it if you respond in a customer-centric way.

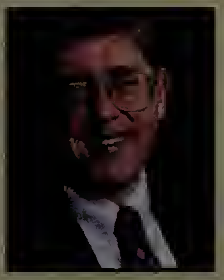
Steve, the customer is your judge and jury. Not Bill Gates, not Bob Dole, not Anne Bingaman. Put AOL up against anything Redmond can offer, and may the best service win.

And in your next Gap advertisement, smile!

Beach is president and chief executive officer of *Computerworld*.

Apple won't die. Deal with it.

John Gantz



IS will still have to support rogue bands of Macintosh users, even after Windows 95.

As the marketing hoopla and IS teeth-gnashing reach a crescendo for Microsoft's Windows 95, keep in mind that not all your users give a hoot. Most of you have at least pockets of Macintosh users; some of you have whole satchels of Macintosh users. They've been working with Windows 95 — at least the user interface and plug and play — for years.

While everyone's eyes are on the Windows market, the Macintosh market is going through a quiet renaissance. Not only will it just not go away, but it's also showing signs of new life.

Macintoshes account for about one in 10 desktop or portable systems shipped in the world, placing Apple in the top tier of PC vendors. In the first quarter of 1995, only Compaq sold more computers than Apple. And studies by International Data Group indicate Apple has the highest brand loyalty of any PC vendor.

There are several factors at play here, with consequences for corporate and departmental information technology managers.

For one thing, the migration to the PowerPC has given the Macintosh new technological life. By 1999, according to International Data Corp. (IDC), the installed base of Macintoshes will be fully switched to the Power architecture. For another, the advent of Macintosh clones — albeit not too many of them — will re-energize the market. IDC expects 15% to 20% of Macintoshes to be clones by the end of the decade.

There are the other possibilities, such as IBM offering the Macintosh operating system on the PowerPC and Apple finding a large licensee. It will also help that the Macintosh now supports the PCI bus, so hardware vendors can develop products for both Windows and Macintosh machines with one design effort.

Chances are that if you have Macintosh users in your organization now, you'll still have them even after you migrate to Windows 95. There's also a good chance that, as you open your systems to access by telecommuters, on-line consumers, suppliers and customers, you're going to run into rogue bands of Macintosh users. The Macintosh is already an excellent machine for accessing the Internet or hosting World Wide Web home pages, for instance.

Meanwhile, your Macintosh costs are going to go up on a per-user basis. Increased complexity caused by the introduction of clones and the PCI bus will stretch out product evaluations and put more strain on help desk and technical support teams — even as they're trying to deal with an even bigger explosion of configurations in the Windows market.

Even so, you probably spend less per unit of end-user happiness — however you measure it — supporting a Macintosh than supporting a Windows system. I don't expect this to change. Two years down the road, when you're in the throes of implementing 32-bit applications for Windows 95 and dealing with all the attendant problems, you may be glad to have some friendly, contented Macintosh users.

And if you think migrating to Windows 95 is an opportunity to convert your Macintosh users to PCs, you might want to think again. They won't move willingly, they won't be happy after they do, and you won't save as much money and headaches as you think.

Gantz is a senior vice president at International Data Corp. in Framingham, Mass.

It takes *a* lot *of* courage *to* give every employee *this* much power.

INTRODUCING PENTIUM® PROCESSORS IN THE DIGITAL VENTURIS™ LINE.

If you're thinking of buying a fleet of barely adequate econoboxes for the masses, think again. The Venturis 575, 590, 5100 and 5120 give you a choice of Pentium® processors boasting up to 120 MHz of power. That's combined with PCI bus, plug and play, and incredibly easy set-up and integration. Some entry-level machine, huh? Put this in the hands of employees accustomed to using overblown typewriters and they'll start doing things you never thought about putting in their job descriptions. And doing them faster, too. Of course, bringing change into the workplace always takes a bit of courage. Then again, considering all the advantages of the new Venturis, you'd have to be pretty brave to buy anything else.

Call 1-800-DIGITAL for your nearest reseller.

intel inside pentium PROCESSOR

digital™ PC

© Digital Equipment Corporation 1995. Digital, the Digital logo, and Venturis are trademarks of Digital Equipment Corporation. Pentium and the Intel Inside Pentium Processor logo are registered trademarks of Intel Corporation. Three-year limited hardware warranty. Certain restrictions and exclusions apply.

Insignia aids Macintosh/PC compatibility, 41
New products, 41

Desktop Computing

PCs AND SOFTWARE • PORTABLE COMPUTERS

WordPerfect upgrade may keep users on DOS

By Cheryl Gerber

Novell, Inc. recently released a feature-rich, Windows-like upgrade of WordPerfect for DOS that could add years to some users' PC investments.

Along with its current $79-per-seat upgrade cost come a number of enhanced features and a much-welcomed stability that was lacking in the Windows 3.1 version.

"I've done a lot of beta testing, and this is the most rock-solid program from the first build I've ever seen," said Tom Canaday, a beta tester and administrative officer at the New York State Education Department in Albany.

Canaday said the users in his department have chosen the DOS version of WordPerfect over its Windows 3.1 counterpart because they don't get lockups or General Protection Faults when running the DOS version, as there often are with Windows 3.1.

Low-cost move

Lawyers breathe a sigh of relief when they see this program, said Gary Karasik, president of GKEnterprises in Tallahassee, Fla., and a systems consultant who specializes in the legal market.

"At this time of software and hardware upheaval in the industry, the cost of upgrades terrorizes law firms," he explained. "They are thinking, 'It's a $100,000 investment.' So when I tell them this version of WordPerfect will cost them less than $100 per station to upgrade, they are happy to spend it, given what they are saving."

There are no training costs associated with the upgrade, Karasik noted, because the commands are the same from one revision to the next. As a result, Karasik said, his legal clients and his company plan to postpone upgrading to any version of Windows for several years.

What's in it

Enhancements in WordPerfect 6.1 for DOS include the following:

- Make It Fit, which expands or shrinks type sizes, margins and line spacing to fit the number of pages the user wants. Templates automate the creation of standard documents such as letters, memos, newsletters and calendars.
- QuickCorrect, an automatic spell checker, punctuation provider and space justifier between words and sentences.
- QuickFormat, which automates typeface and other text attributes.

With this program (or with WordPerfect 6.1 for DOS), users have no need to move any time soon to Windows, said Chris Le Tocq, an analyst at SoftTracks Software

WordPerfect, *page 40*

Even better

Top 3 improvements in WordPerfect 6.1 for DOS

1. **Templates** – Automates document creation
2. **QuickFormat** – Automates text styling
3. **Make It Fit** – Automates text and margin sizing on page

Visio draws first

Graphics package beats Win 95 out the door

By Stuart J. Johnston

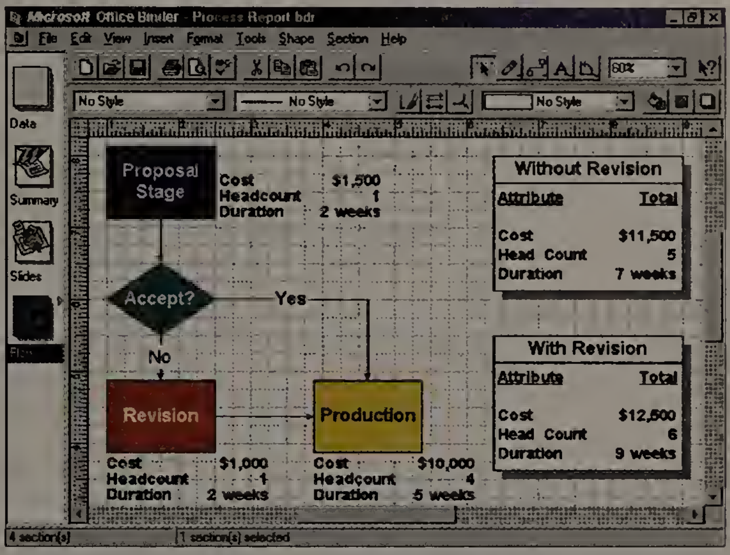
When Windows 95 ships at the end of the month, Microsoft Corp. won't be the only company immediately shipping new applications to take advantage of its features.

Seattle-based Visio Corp. this week will ship an updated version of its Visio drawing package, which is geared to users who don't usually draw.

Visio 4.0 provides a broad array of new features, including support for Microsoft's Office 95 Binder. Another version, customized for technical drawing, will ship Sept. 8, according to company officials.

The Binder feature, which is based on extensions to Microsoft's OLE technology, is common across all Microsoft Office applications. It uses the metaphor of a three-ring binder to enable users to store related documents and files in one file called an Office Binder.

Drawings created in Visio 4.0 or Visio Technical 4.0 can be easily incorporated in an Office Binder document, according to Charlotte Empey, Visio product manager.



Visio 4.0's Binder *feature uses a 'three-ring binder' metaphor that enables users to store related documents and files in a single Office Binder file*

"If you're distributing a document to someone electronically, it's much better to send it to them as a single file," said Michael Heylin, senior associate at Creative Strategies Consulting in San Francisco.

Heylin said the new features extend the types of capabilities that have set Visio apart from competing products, such as drawing packages, organization chart generators and low-end computer-aided design (CAD) systems. "What sets Visio apart is that it does all

Visio, *page 40*

A wizard is an automated set of menus that leads the user through a series of steps to accomplish a specific task.

Technology helps climbers to top

Hardware survives Everest trek

By Michael Fitzgerald

Everest expedition 'CIO' Steve Reneker *kept systems up and running at the highest point on earth*

The CIO reached the summit, the notebook computers survived and the printer was a hero. But Everest.net will have to happen some other time.

On most counts, the '95 American Mount Everest expedition was a success. Eight climbers made it to the summit, including Steve Reneker, director of information systems at the Eastern Municipal Water District in San Jacinto, Calif., and the expedition's unofficial chief information officer.

The group was able to do several things in the three-month trip, such as measure the summit (there is a 26-ft. strip of undeveloped real estate at the top of the world). They also used notebooks for planning and to advance several research projects [CW, Jan. 30 and May 1].

The Everest climb was a gut check for the notebooks because temperatures at night fell far below the recommended temperatures for the products.

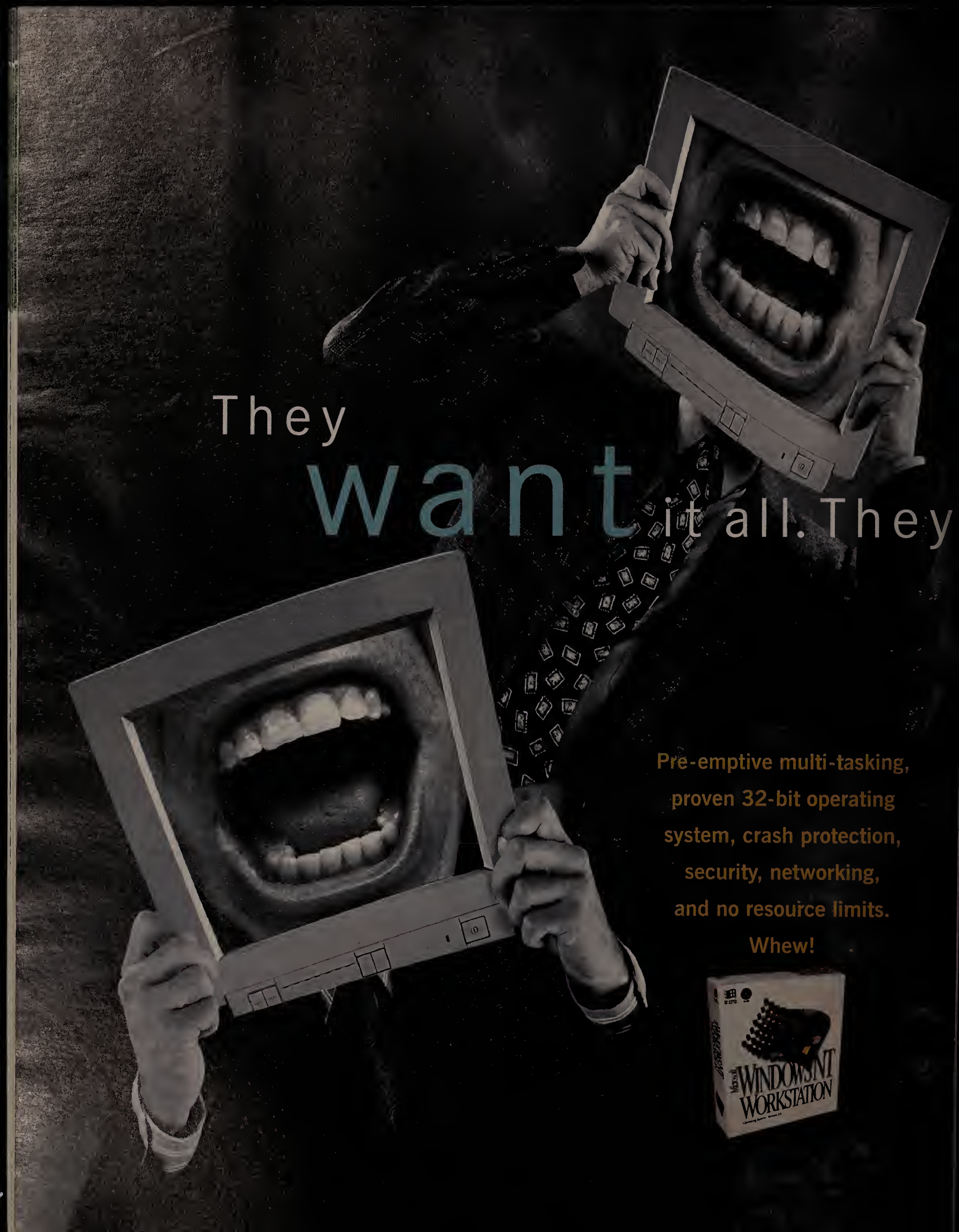
"When you lift the LCD lid at below-freezing temperatures, it looks like a glazed donut," Reneker said.

The unexpected hero of the trip was a Citizen, Inc. PN60 portable printer. Getting a modem connection over a satellite link took a full minute, which cost $5.50. By printing out the daily report and faxing it, the expedition shaved money off a phone bill that Reneker estimated will top $15,000.

While the expedition had glorious plans to use a global positioning system (GPS) to track its exact route up the mountain, that system came in handy mostly for finding the best areas to set up camp. Reneker said the GPS equipment suffered from battery problems and display issues higher than 24,000 feet above sea level, rendering the gear difficult to use.

Unfortunately, a plan to send the first electronic mail from an Everest base camp had to be put on ice. While On Technology Corp. had donated Da Vinci mail and set up an in-box on its home network, the NEC Corp. satellite "changed the signal so it wouldn't be accepted by a modem on the other end," Reneker said.

Maybe next year.


They
want it all. They
Microsoft
WINDOWS NT
WORKSTATION

Pre-emptive multi-tasking, proven 32-bit operating system, crash protection, security, networking, and no resource limits. Whew!

**Microsoft Windows NT
Workstation gives
your high-end users
the powerful
operating features
they want. NOW.**

want it now.

Chances are, your high-end users have been screaming for an operating system that can keep up with their demands. You, on the other hand, want a system that's secure, reliable and compatible with the networks, hardware and applications you already have.

Microsoft® Windows NT™ Workstation may be the answer. It's the high-end complement to the Microsoft Windows® 95 operating system. It can handle the most demanding business needs. From financial analysis and engineering to manufacturing and corporate development.

Windows NT Workstation can make your job easier. Built-in security helps prevent user-error, tampering and unauthorized access. Proven reliability means less downtime and fewer service calls. Remote management allows you to gather information and administer the system from your desktop. And because it supports Windows NT Server, Novell® NetWare® and UNIX® networks, it's network-ready right out of the box.

Your users will get what they want. They can run and integrate both 16-and 32-bit business and productivity applications, including the new wave of applications built for Windows 95. Users can run two or more applications at the same time with full pre-emptive multitasking. There's full crash protection so even if one application fails, the others continue to run. And through better use of system resources, users won't be bothered with "out of memory" messages. It just works. Giving your users exactly what they want.

To get all the details, call (800)583-0034, Dept. YWD, or visit the BackOffice section of our website at http://www.microsoft.com.

Microsoft®

WHERE DO YOU WANT TO GO TODAY?™

Windows NT Workstation can run on a 12 MB 486DX or RISC-based system (including MIPS® R4x00,™ DEC™ Alpha AXP™ and Power PC™), runs most MS-DOS® and 16-bit applications, and is compatible with most hardware and peripheral configurations. For information only: In Canada, call (800) 563-9048. © 1995 Microsoft Corporation. All rights reserved. Microsoft, MS-DOS and Windows are registered trademarks of Microsoft Corporation. *Where do you want to go today?* and Windows NT are trademarks of Microsoft Corporation. Alpha AXP and DEC are trademarks of Digital Equipment Corporation. MIPS is a registered trademark and R4x00 is a trademark of MIPS Computer Systems, Inc. NetWare and Novell are registered trademarks of Novell, Inc. PowerPC is a trademark of International Business Machines Corporation. UNIX is a registered trademark in the United States and other countries, licensed exclusively through X/Open Company, Ltd.

Visio

CONTINUED FROM PAGE 37

of those things and more," Heylin said.

Visio 4.0 and Visio Technical 4.0 both support major new capabilities in Windows 95, such as multitasking, long file names and scraps, which let users drag and drop Visio diagrams onto the desktop for later use.

The two packages also provide new "wizards" for quickly handling chores such as designing pages, building organization charts or creating time lines. One new set of features — the ability to use OLE to link to corporate databases and Notes databases — caught the interest of one beta tester.

"The whole idea of using Visio for data-driven [applications] is interesting because [today] we use Microsoft Excel for [that]," said Christine Salomon, president of The BusinessMedia Group, Inc. in New York, a custom applications developer for Fortune 1,000 companies. "Visio 4.0 allows you to give users a different interface to their data."

"I think the Notes integration is very significant because the next step in business diagramming is connection to business data, and Notes is an important information source," Heylin said. "I've got this data. Now, how do I communicate it?"

As in earlier versions of Visio, the user interface can be set to mimic Microsoft Office or Lotus Development Corp. SmartSuite applications. But Visio 4.0 also can now adopt the look and feel of Novell, Inc.'s PerfectOffice applications.

New drawing features

Visio Technical 4.0 features more than 2,000 industry-specific SmartShapes, which are object-oriented components used in various types of technical drawings. The product also adds the ability to import AutoCAD drawings and edit and save them in standard AutoCAD formats.

New features in Visio 4.0 for Windows 95

- Support for Microsoft Office Binder
- Support for Windows 95 long file names, multitasking and scraps
- New Page Layout, Org Chart and Timeline Wizards
- Ability to adopt the user interface features of Novell PerfectOffice
- OLE links to corporate databases and Notes databases

Other new features in Visio Technical 4.0 include a new drawing tool and the ability to create multiple layers in a drawing.

Visio 4.0's suggested retail price is $249, and upgrades cost $79. Visio Technical 4.0's suggested retail price is $399, with upgrades set at $99 for Visio Technical 3.0 users and $129 for all other Visio users.

Both products include a 32-bit version that runs under Windows 95 and Microsoft's Windows NT 3.51 as well as a 16-bit version that runs under Windows 3.1.

the solutions supersource

SEPTEMBER 12-14, 1995
DALLAS CONVENTION CENTER

Mobile/Wireless Computing
Infrastructure
Network Management
Windows
Media & Protocols
Interoperability
LAN/WAN
Windows NT
Network Computing
Groupware
Telecommunications
Internet
Client/Server
Multimedia
Network Security
NetWare®
Enterprise Networking
ATM

networks expo®
Dallas '95
10th Annual

WINDOWS WORLD for desktop solutions: One trip, two great events
Get your networking solutions at NETWORKS EXPO DALLAS

Networks Expo Dallas will feature every networking solution you need to know about — and provide the insight you need to make great buying decisions.

Start with our extensive exhibit hall, packed wall-to-wall with industry leaders: Novell, Microsoft, IBM, Hewlett-Packard, Banyan, AT&T, MCI and hundreds more. With thousands of solutions for gaining competitive advantage from your network.

[illegible] see the cutting-edge network solutions and new products first [illegible] Expo and you'll learn about them at the most comprehensive [illegible] and Training Program in the business: 60+ sessions [illegible] solutions for...

- [illegible] ent and planning
- [illegible] client/server, mobile, telecommuting
- [illegible] .1, Windows 95 and NT
- [illegible] networking, including ATM and Fast Ethernet

[illegible] people at Networks Expo Dallas. Get your hands [illegible] tions from top companies at 16 interactive Network [illegible] Association (NPA) Hands-On Labs. Plan Internet strategy [illegible] experts at our new Internet Pavilion featuring the interactive [illegible] It's all here. All your solutions, all in one place. [illegible] Dallas. Your solutions supersource.

[illegible]24 TODAY FOR ATTENDEE INFORMATION.
[illegible], EXT. 318 FOR EXHIBITOR INFORMATION.
[illegible] MAIL/FAX THE COUPON BELOW FOR MORE INFORMATION.

BLENHEIM
Networks Expo is produced and managed by Blenheim Group USA, Inc.
Fort Lee Executive Park • One Executive Drive • Fort Lee, NJ 07024
800-829-3976 • 201-346-1400 • Fax 201-346-1602

[illegible] service mark of Blenheim Group USA, Inc. WINDOWS WORLD/Dallas Conference and Exposition is the property [illegible] GR [illegible] DA Inc. WINDOWS WORLD is produced in cooperation with Microsoft Corporation. WINDOWS WORLD, Windows, [illegible] marks of Microsoft Corporation. NetWare® is a registered trademark of Novell, Inc. Novell, Inc. is not associated [illegible] Products Pavilion. Networks Expo is a trade event only. Minors under the age of 18 are not permitted on site. Your [illegible] will be confiscated and terminated upon any attempt to transfer or sell it. Networks Expo reserves the right to use [illegible] Show for promotional purposes. The Internet Theater™ is a trademark of Pencom Systems, Inc.

Please complete and return this coupon by mail, or FAX to 201-346-1602, Attn: Jay Gorga.

Name ______________________ (PLEASE PRINT) Title ______________________
Company ______________________
Address ______________________ City ______________ State ____ Zip ________
Telephone (____) ______________________ Fax (____) ______________________

Please send me information about:
☐ Attending ☐ Exhibiting ☐ Corporate Education & Training Program

For the following Networks Expo event(s):
☐ Dallas (September 12-14, 1995) ☐ Boston (February 13-15, 1996)

WordPerfect

CONTINUED FROM PAGE 37

Research in Los Altos, Calif. He added that users who choose to run the program in a Windows environment should run it on Windows 95 because it handles it better than Windows 3.1 does.

In 1994, there were 54.9 million PCs with DOS-only operating systems, according to a recent International Data Corp. report.

WordPerfect 6.1 for DOS is scheduled to ship at summer's end and will retail for $295 with six months of unlimited toll-free support. The upgrade price is $89. WordPerfect for DOS users can upgrade for $79 through October. Novell is offering a free upgrade for customers who purchase WordPerfect 6.0 for DOS between July 17 and Sept. 15.

Insignia gives Macs a hand

SoftWindows update enhances compatibility with Windows PCs

By Lisa Picarille

Insignia Solutions, Inc. is playing an important role in Apple Computer, Inc.'s "fit in but stand out" strategy.

At last week's Macworld Expo in Boston, Insignia unveiled an updated version of its SoftWindows application. SoftWindows 2.0, which enables DOS and Windows software to run on the Power Macintosh, is faster than the previous version because it was specifically written to run on the Power Macintosh.

Insignia and Apple hope this capability will further convince users that the Macintosh offers compatibility with PC-based systems and even leverages previous PC software investments.

Macintosh users said SoftWindows gives them the freedom to keep their Macintoshes even in predominantly Windows environments.

"The ability to run Windows applications is less of an issue for me because I use my Mac primarily to do graphics and video work," said Harry Mott, a broadcast designer at the American Film Institute, Inc. in Los Angeles. He said if he needed database tools or other number-intensive productivity applications, "I would probably be forced to use Windows applications, but I would still want to use my Mac and this program would let me."

No big change

Insignia's SoftWindows 2.0 lets users run PC-based Windows and DOS software, without any modifications, by emulating Intel Corp.'s I486 chip instruction set and handling Windows enhanced mode. The previous release — SoftWindows 1.5 — emulated only a 80286 chip and supported Windows standard mode.

SoftWindows 2.0 also supports custom-developed applications that were created with development tools such as Powersoft Corp.'s PowerBuilder and Microsoft Corp.'s Visual Basic.

For corporate users, SoftWindows 2.0 also provides connections to Novell, Inc.'s NetWare, TCP/IP, Microsoft's LAN Manager and Windows NT, Banyan Systems, Inc.'s Vines and Digital Equipment Corp.'s Pathworks across both Ethernet and Token Ring networks. Macintosh and Windows applications share the same IPX networking connection via SoftWindows 2.0's support for Novell's MacIPX.

Version 2.0 also offers bidirectional support for the Windows Sound System, which means that users can record and play audio. And support for Apple's AppleScript language lets users write scripts — similar to macro commands — to perform basic Windows and DOS functions.

Apple's own Mac-to-DOS solution is currently only in hardware. An add-in card gives users the ability to run DOS and Windows applications on a Power Macintosh 6100. The Cupertino, Calif., company claims the 6100 is one of its best-selling machines. Early next year Apple plans to offer similar emulation capabilities in the form of software, according to Dan Limp at Apple.

Beyond that, Apple is working with IBM to create the Common Hardware Reference Platform (CHRP) that will enable both companies to build machines capable of running six different operating systems on a single box. Apple and IBM are slated to deliver their respective CHRP systems by the end of 1996, according to officials from both companies.

In the meantime, SoftWindows is available immediately and is expected to have a retail price of approximately $299. Users of the current version can upgrade for $129.

Insignia Solutions' SoftWindows 2.0 for the Power Macintosh:

- Emulates the Intel's I486 instruction set to run all Windows and DOS applications on the Power Macintosh
- Includes bidirectional sound support for Windows applications
- Supports a variety of network servers including NetWare, TCP/IP, LAN Manager, Windows NT, Vines and Pathworks
- Supports multiple networking protocols including Ethernet and Token Ring
- Costs $299

Apple's price-busting Power Macintoshes

For more than a decade, Apple has been criticized for charging a premium price for its Macintoshes. Now, pricing pressure from the PC arena and a burgeoning Macintosh clone market have forced Apple's prices down to a level comparable with those of other top-tier vendors. Apple's new Power Macintoshes, due out this week, bring the power of RISC-based processing to a price point Apple hopes will spark its PowerPC push.

Company	Model	Chip	RAM	Hard drive	Price
Apple	8500	120-MHz PowerPC 604	16M bytes	1G byte	$4,059
Compaq	DeskPro XL512	100-MHz Pentium	16M bytes	1G byte	$4,627
IBM	PC700	100-MHz Pentium	16M bytes	728M bytes	$4,399
Apple	7500	100-MHz PowerPC 601	16M bytes	500M bytes	$2,779
Compaq	ProLinea 5100	100-MHz Pentium	16M bytes	720M bytes	$3,714
IBM	PC700	100-MHz Pentium	16M bytes	540M bytes	$3,534
Apple	7200	90-MHz PowerPC 601	8M bytes	500M bytes	$1,979
Compaq	ProLinea 590	90-MHz Pentium	8M bytes	420M bytes	$2,712
IBM	PC700	90-MHz Pentium	8M bytes	540M bytes	$2,597
Apple	7200	75-MHz PowerPC 601	8M bytes	500M bytes	$1,779
Compaq	DeskPro 575	75-MHz Pentium	8M bytes	420M bytes	$2,484
IBM	PC700	75-MHz Pentium	8M bytes	364M bytes	$2,000

All Apple systems include a quad-speed CD-ROM drive

Sources: Apple, IBM PC Direct, CompUSA, ComputerLand

Adaptive Solutions, Inc. has announced PowerShop, an accelerator for Adobe Systems, Inc.'s Photoshop.

According to the Beaverton, Ore., company, PowerShop uses chip-level parallel processing to accelerate Photoshop functions up to 1,000% more than the fastest Macintosh systems. After installation, PowerShop runs standard Photoshop applications with no modification.

PowerShop uses Adobe's extension architecture to speed up computation-intensive tasks, including color transformations, rotate, unsharp mask and Gaussian blur.

Pricing for PowerShop starts at $3,000.

▶ *Adaptive Solutions*
(503) 690-1236

Tadpole Technology, Inc. has unveiled Tadpole P1300, a 133-MHz Intel Corp. Pentium processor-based notebook PC.

According to the Austin, Texas, company, Tadpole P1300 was designed for mobile professionals who require access to performance-critical applications such as modeling, real-time data analysis, large database management and complex multimedia. It features a high-resolution, 10.4-in. display and direct I/O ports for external mouse, external video, parallel port, floppy disk drive and headphones.

Tadpole P1300 also features 8M bytes to 128M bytes of upgradable RAM. It has a minidocking station option using a 260-pin expansion connector to provide direct I/O ports and additional interfaces for SCSI, stereo audio I/O, external keyboard and a serial port.

With typical use, Tadpole P1300 runs for 1½ hours on its internal battery; with a clip-on battery pack it runs up to 5 continuous hours.

Pricing for a typical system configured with 8M bytes dynamic RAM and a 340M-byte hard drive starts at $6,995.

▶ *Tadpole Technology*
(512) 219-2200

Digital Instrumentation Technology, Inc. has introduced TransferPro for Windows, a high-speed file-transfer program.

According to the Los Alamos, N.M., company, TransferPro for Windows lets users quickly read and write Macintosh files on a PC and write a device driver to disk or cartridge. It was designed especially for desktop publishers who move large files and need a lot of storage.

TransferPro for Windows includes graphics image viewers and converters that let users preview graphics images and convert them from one type to another. It also includes a diskette, cartridge and hard disk database feature. The database can track the disk label, the type of format on the disk (Macintosh or DOS), the disk directory and the disk file structure.

TransferPro for Windows performs most file transfer operations on PC media using a built-in diskette drive or standard SCSI devices. It costs $169.

▶ *Digital Instrumentation Technology*
(505) 662-1459

Boxer Software has introduced Boxer/DOS 7.0, Boxer/TKO 7.0 and Boxer OS/27.0, ASCII text editors.

According to the Peterborough, N.H., company, the text editors were designed for programmers and writers who need to manipulate ASCII text. Boxer/DOS 7.0 was designed for most text-editing tasks and uses conventional 640K-byte memory.

Boxer/TKO 7.0 is a protected mode DOS editor for very large files. Boxer OS/2 is a 32-bit character mode editor that runs full-screen or windowed on IBM's OS/2 2.x and Warp.

Boxer/DOS costs $50. Boxer/TKO and Boxer OS/2 both include Boxer/DOS and cost $89 each.

▶ *Boxer Software*
(603) 924-6602

Product shorts

Wearnes Peripherals International has announced a six-speed CD-ROM drive, the CDD-320. The CDD-320 offers plug-and-play capabilities and fast access to stored data. It also lets users play music CDs while operating applications on the PC, independent of the drive. Cost: $399. Wearnes Peripherals, San Jose, Calif. (408) 432-1888.... **Aiwa America, Inc.** has released the TD-P250 Parallel Printer Port Tape Backup System. Users can back up data onto tape cartridges by plugging a drive cable into the parallel printer port. It operates at up to 9.5M bytes/min. and has a maximum 250M-byte storage capacity. Cost: $150. Aiwa America, Mahwah, N.J., (201) 512-3600.

$2,140*

HP NetServer L[illegible]

- [illegible]
- [illegible]
- [illegible]
- [illegible]

$3,[illegible]

HP NetServer [illegible]

- [illegible]
- Hot [illegible]
- [illegible]
- [illegible]

$5,[illegible] NEW

HP NetServer LH

- [illegible]
- [illegible]MB [illegible]
- Hot Swap [illegible]
- Two [illegible] Pentium [illegible]

$8,495* NEW

HP NetServer [illegible]

- [illegible]
- Dual PCI Peer Bus Implementation
- [illegible]MB [illegible] ECC Memory [illegible]
- [illegible] Pentium [illegible]

HP NetServer Navigator Manageability Suite

- Configuration Assistant
- Diagnostic Assistant
- Information Assistant

HP NetServer Assistant

[illegible]

HP Remote Assistant

[illegible]

[illegible]

HEWLETT PACKARD NetServer
NetServer

Upon reflection, there's no better way to manage the cost of running your network.

Presenting HP NetServers with the NetServer Navigator on CD-ROM. The cost-effective way to manage your network.

When you stop and think about it, the real cost of your network isn't the purchase price. It's everything you pay for afterward.

Precisely why you should consider an HP NetServer, with its industry-leading Manageability Suite. By simplifying server installation, configuration, support and management, HP significantly reduces your cost of network ownership. Of course, our new low pricing makes an HP NetServer a lot less expensive to own in the first place.

For more information, call us today at 1-800-533-1333†, Ext. 9479 or visit our web site at http://www.hp.com/go/netserver. You'll never look at the cost of running your network the same way again.

HP NetServers
Manage everywhere, from anywhere.

HEWLETT®
PACKARD

If you've been to hell and back trying to find a powerful platform for your Business Critical applications, the wait is over. For years, SCO's powerful client/server operating system – for the cost-effective Intel® platform – has been the foundation for critical business functions for hundreds of thousands of businesses worldwide, big and small. Helping them get closer to their customers, while running faster and leaner than their competitors. And now we've made it even better.

INTRODUCING THE NEXT GENERATION OF BUSINESS CRITICAL SERVERS.

SCO OpenServer Release 5 is the next generation of the server operating system that has made powerful Business Critical Computing a reality. It's backwards compatible with earlier releases, yet a quantum leap ahead in advancements. And it features the same proven reliability that has made us the world's leading provider of UNIX® servers.

NEW
SCO OPENSERVER™
RELEASE 5.

- Mainframe-class reliability and availability
- Better performance than RISC-based systems
- Scalability from desktops to servers running thousands of users
- Local and remote system administration and management
- Software management and network distribution
- Windows® and PC integration
- Interoperability with TCP/IP, IPX/SPX™, NetBios, NetBEUI, SNA,™* DecNet*, Banyan*
- Runs existing SCO® UNIX Systems and XENIX® business applications

1-800-SCO-8594

SCO

It's Business Critical. It's SCO.

New! Release 5
SCO OpenServer
Demonstration Disk

FIND OUT MORE WITH YOUR FREE DEMO DISK.

We'd have a devil of a time trying to list all the benefits of SCO OpenServer Release 5 in one ad, which is why we're offering a free demo disk that includes everything you need to check out SCO OpenServer Release 5 for yourself. Call us today for your copy, and discover how you can give your organization one hell of a competitive advantage.

WEB ADDRESS: http://www.sco.com

GET YOUR BUSINESS CRITICAL APPLICATIONS UP AND RUNNING BEFORE HELL FREEZES OVER.

*Available through third-party suppliers.

SCO Corporate Headquarters, Santa Cruz, California, USA 1 (408) 425-7222 SC

SCO, The Santa Cruz Operation, the SCO logo and SCO OpenServer are trademarks or registered ... X/Open Company Limited.
All other brand or product names are or may be trademarks of, and are used to identify the products and se...

Car dealer confronts client/server challenge, 48
Digital phone operator adds user-friendly features, 49

Workgroup Computing

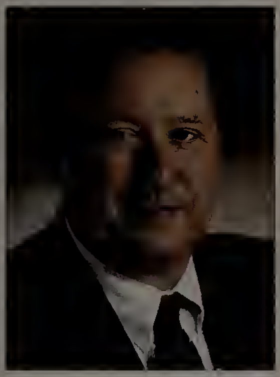
LANs • SERVERS • SOFTWARE FOR GROUPS

AMD out-Notes users

Firm gets jump on eager users by establishing a strategy early

By Suruchi Mohan

When a company embarks on a product implementation, users should be able to count on one thing: The technology will be implemented correctly from the start.


AMD's Doug Ritchie *decided not to force users to switch to Notes*

And Sunnyvale, Calif.-based Advanced Micro Devices is trying to do just that in its implementation of Lotus Development Corp.'s Notes groupware platform. When Notes started appearing in thè sales department, AMD moved quickly to establish a strategy for the implementation. That is different from many companies, which blunder along for a time before deciding on a strategy.

Not like the others

In most corporations, "Notes has always started with small groups," said Doug Ritchie, AMD's vice president of information integration and access. "Then the corporation wakes up to find hundreds or thousands of Notes applications running without a corporate strategy."

But when AMD discovered last year that Notes had already found a foothold, it quickly decided to implement a new network infrastructure to support it. Then it halted deployment of Notes until the infrastructure was in place.

AMD quickly changed the architecture and topology of its network to accommodate Notes, said Debbie Mueller, senior manager at Lotus Consulting in San Francisco, which helped AMD handle some of its naming conventions. For instance, "they went from multiple domains to one name and address book."

Further, it standardized on the security and replication methods within Notes. The company also decided to run Notes on both Unix and Microsoft Corp.'s Windows NT. AMD has a large implementation of Unix; it is now creating a corporate hub using NT.

Also, Ritchie decided that the company would only provide an infrastructure capable of handling Notes; it would not force employees to use it.

AMD made this decision because it recognized that some groupware issues, such as how to get people to work in teams, are universal. It further decided that groupware might not work well for everyone, so it let users make their own decisions about implementing Notes.

Such issues exist even for techno-geeks, who may find the switch to Notes just as cumbersome as those who work in an insurance department, for instance, Ritchie said.

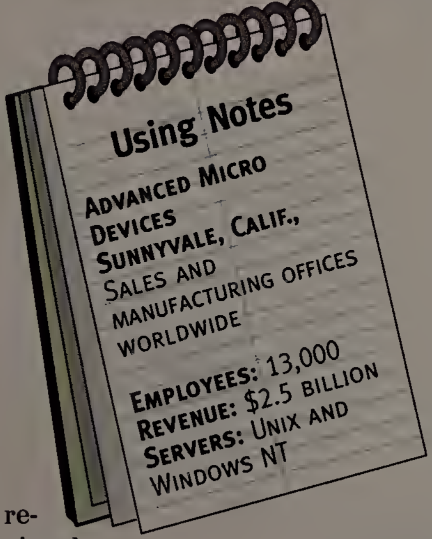
Sally Lowery, manager of quality systems at AMD, said her group was one of the early adopters, having used the technology since 1993. Although pleased with Notes' effectiveness in enhancing communications and replacing paper, she has had to deal with cultural issues.

For one, the information does not come directly to the user; the user has to open Notes and look for it. This requires a good understanding of Notes at a fairly early stage, which in turn requires a sound education for those just getting initiated.

Surge expected

Still, in the next couple of years, Ritchie expects to see 4,000 to 5,000 Notes users, and there is the potential for many more among AMD's 12,000 to 14,000 employees.

"They've given it a high-level buy-in and made someone high level in charge of it," said Niall Kelly, regional manager at Infotec Development, Inc., a training and consulting company in Santa Clara, Calif., referring to Ritchie's dedication to the project. "That's key, because if you don't, [the project] falls flat on its face."


Using Notes

ADVANCED MICRO DEVICES
SUNNYVALE, CALIF.,
SALES AND MANUFACTURING OFFICES WORLDWIDE

EMPLOYEES: 13,000
REVENUE: $2.5 BILLION
SERVERS: UNIX AND WINDOWS NT

Briefs

Proteon picks licensee

Proteon, Inc. said it will license key elements of its OpenRoute software suite to **Plaintree Systems,** a switching systems vendor in Waltham, Mass.

Plaintree will use the Proteon routing software in an upcoming line of Ethernet switches.

Other OpenRoute licensees include Digital Equipment Corp., IBM and Motorola, Inc.

NetTools 5.3 bows

McAfee Associates in Santa Clara, Calif., last week unveiled NetTools 5.3, a new version of its Windows desktop configuration management package. NetTools now includes HelpPlus, a trouble ticket generator that monitors client workstations and automatically sends General Protection Fault trouble tickets to network administrators. NetTools 5.3 is available now; two-year subscription fees range from $32 per node for 50 nodes to $19.50 per node for 1,000-node licenses.

GroupWise available for 7 kinds of Unix

GroupWise 4.1, a collaborative computing environment from **Novell Inc.**, is available in character mode in seven flavors of Unix, the company announced last week. The Unix variants include Hewlett-Packard Co.'s HP-UX, IBM's AIX and Sun Microsystems, Inc.'s SunOS and Solaris. It will cost $695 for five users and $195 until Oct. 31.

Betsy Hayes

Faxes, printers and copiers may soon be on speaking terms

By Tim Ouellette

Microsoft Corp.'s struggles getting At Work to work has left room for an industry group to prepare its own proposal to let regular office machines talk to one another.

At Work is Microsoft's application plan to integrate copiers, printers and other office equipment into a Microsoft-based network. Some equipment makers have supported the system, but it has been a quiet market entry at best. As a result, The Salutation Consortium, an industry group of software and hardware vendors, has drafted its own specification to make it easier for users to access office equipment.

The Salutation Consortium includes IBM, Eastman Kodak Co., Novell, Inc. and Hewlett-Packard Co. along with a number of American and Japanese office equipment manufacturers. Originally called the SmartOffice Consortium, the group turned to the Salutation name to describe the dialogue between machines.

> "Embedded operating systems are clearly going to be important, and Microsoft hasn't paid much attention" to them since it hasn't done much to follow up on its At Work initiative.
> —Amy Wohl, Wohl Associates

An ally, not a foe

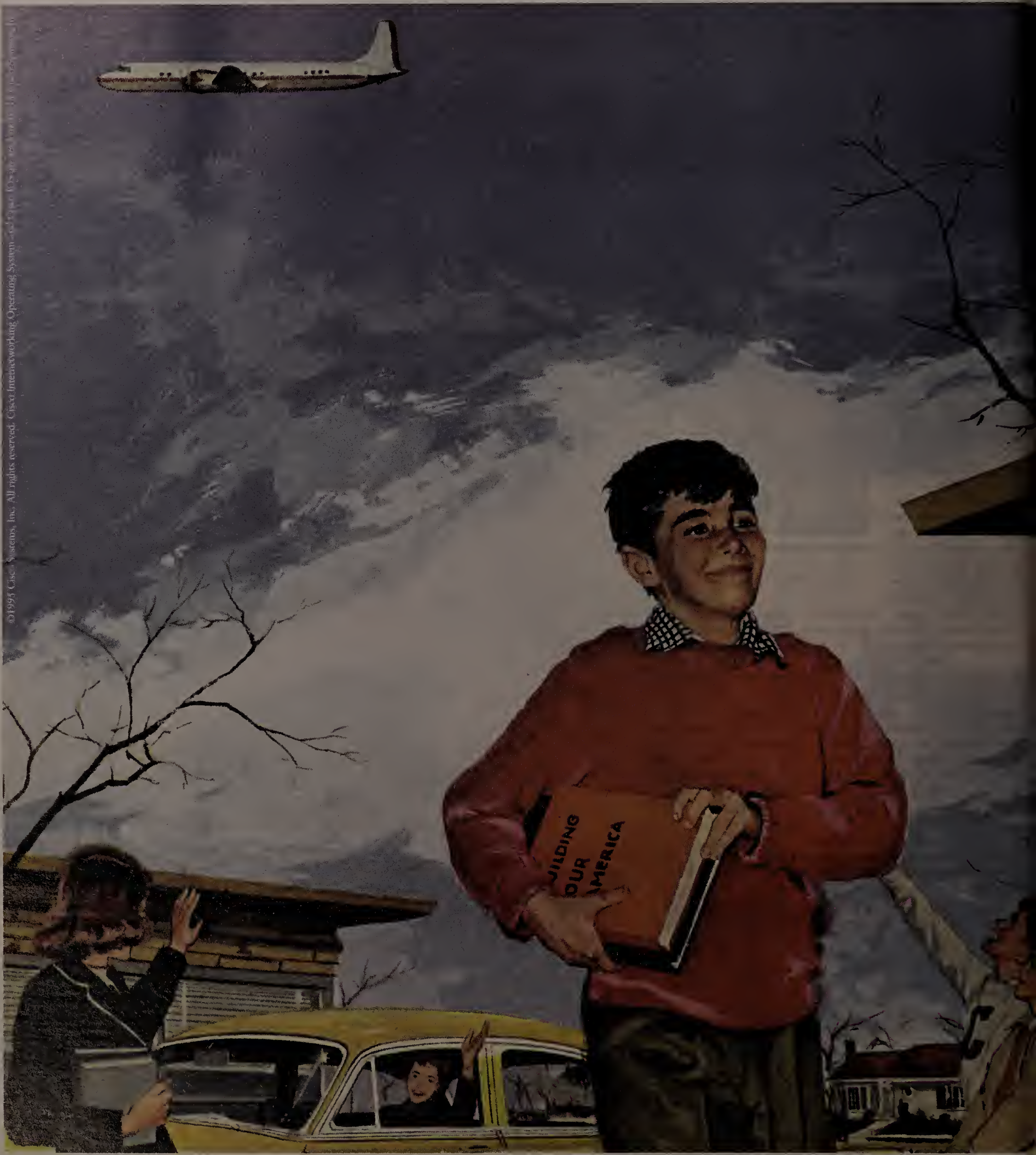
It is possible for At Work and Salutation to shake hands.

"At Work is not a direct challenge. [It] is an end-to-end solution," where the consortium supplies a specification, according to Robert Pascoe, the Salutation Consortium's president.

Adina Levin, an analyst for multifunction products at BIS Strategic Decisions in Norwell, Mass., likened the Salutation effort to that of the fax industry, where someone sending a fax doesn't need to know what kind of fax machine is on the other end because the "electronic handshake" handles that.

The ultimate goal for both efforts is to help users bring all

Faxes, printers, *page 49*



©1995 Cisco Systems, Inc. All rights reserved. Cisco Internetworking Operating System [illegible]

Cisco IOS

With wide-eyed optimism, you thought technology was going to let you set information free. You were going to put power into the hands of the people.

Then reality settled in. Conflicting standards and protocols stood in the way of the free flow of information. Rival companies were outshouting each other with promises of open computing and universal access. But just getting two different networks to talk to each other became a nearly insurmountable task.

There is a way to get your networks to interoperate as one. It's the new Cisco IOS (Internetworking Operating System™). Cisco IOS™ is the unifying thread that connects one network to

REMEMBER WHEN

YOU WERE GOING TO

CHANGE THE WORLD?

LITTLE DID YOU SUSPECT

NETWORK INCOMPATIBILITIES

WOULD CLOUD YOUR

VISION.

others, so your information can flow freely, across LAN and WAN, routers and switches, twisted pair and optical fiber.

Cisco IOS lowers costs, provides a scalable, software-based migration path for future growth, and optimizes the real world performance of your WAN, today.

Available on industry-leading hubs, servers, and wide-area switches, Cisco IOS is the promise of shared information, delivered. Across your entire enterprise.

Ready to change the world? Call us today at 1-800-859-2726. We'll help turn your visions of a networked world into reality.

CISCO SYSTEMS

Car dealer takes the personal out of PCs

By Gary H. Anthes

JM Family Enterprises, Inc. (JMFE) recently found a way to secure hundreds of PCs in the fast-moving world of car sales.

JMFE has to work with extreme decentralization, a highly mobile workforce and a systems strategy driving it toward client/server computing. The challenge is a tough one. The company, with 2,300 employees, is one of the nation's largest sellers of Toyotas and the largest volume Lexus retail dealer in the U.S. This means company employees have a lot of ground to cover, even though JMFE had the automobile industry's first data processing network for dealers.

Security suite

The answer for JMFE, a $4 billion automobile products and services conglomerate, was a suite of three security products from Mergent International, Inc. in Rocky Hill, Conn. The products push security down to the desktop and laptop and allow tight central control. They include the following:

- **PC/Data Access Control System** (DACS), which uses passwords and encryption to protect any combination of hardware resources, directories, subdirectories and files. It also employs automatic time-outs, virus protection, activity logging and other safety features. It has been installed on about 400 machines so far.
- **Single Sign-On (SSO)/DACS**, which allows users to sign on with a single password to any number of disparate networks, hosts and applications.
- **Domain/DACS**, which allows central administration of the workstation-based PC/DACS and SSO/DACS. It can be used to download security settings, programs or files to end-user PCs.

Employees of the Deerfield Beach, Fla.-based JMFE spend a lot of time traveling to 164 Toyota dealers around the Southeast, where they use financial software installed on laptop computers to help dealers manage operations. As a result, those laptops often hold sensitive information such as dealer vehicle allocations and profit analyses, said Edward Machek, group vice president at JMFE's Information Technology Services company.

JMFE's Ed Sarama: *'I hate the term 'personal' computers because everyone thinks it's theirs'*

"One of our concerns was, say, that a district manager is in a hotel and his laptop is stolen," Machek said. "We have [security] on the mainframe, but without DACS on the PC, we were vulnerable."

As for the single sign-on product, Machek said, "It makes it more seamless for users to interact with the computer. It eliminates one obstacle to their getting to their work."

With SSO/DACS, users can log on to their PCs once and then move transparently to the PC's applications, Novell, Inc. LANs, an IBM AS/400, Notes or mainframe systems, Machek said.

JMFE's approach to PC security has made virus protection relatively safe and simple, said Ed Sarama, director of contingency planning and information security at the company. Users are blocked from loading their own software because DACS locks the .exe and .com files on the machine. When new software needs to be loaded, someone at a central help desk temporarily unlocks the files while the user loads the software.

Getting personal

But that centralized control wasn't well received by all users. "The biggest challenge has been a cultural one," Sarama said. "Users can't just do anything they want anymore."

Nevertheless, Sarama said the discipline is a good thing.

"I hate the term 'personal' computers because everyone thinks it's theirs," he said. "But when we came in and started securing them, right away they realized that this is a business tool."

Sarama said JMFE is still in the process of securing and standardizing what had been an endless variety of PC configurations. That ultimately benefits end users, he said, because it allows the help desk to be more responsive to requests.

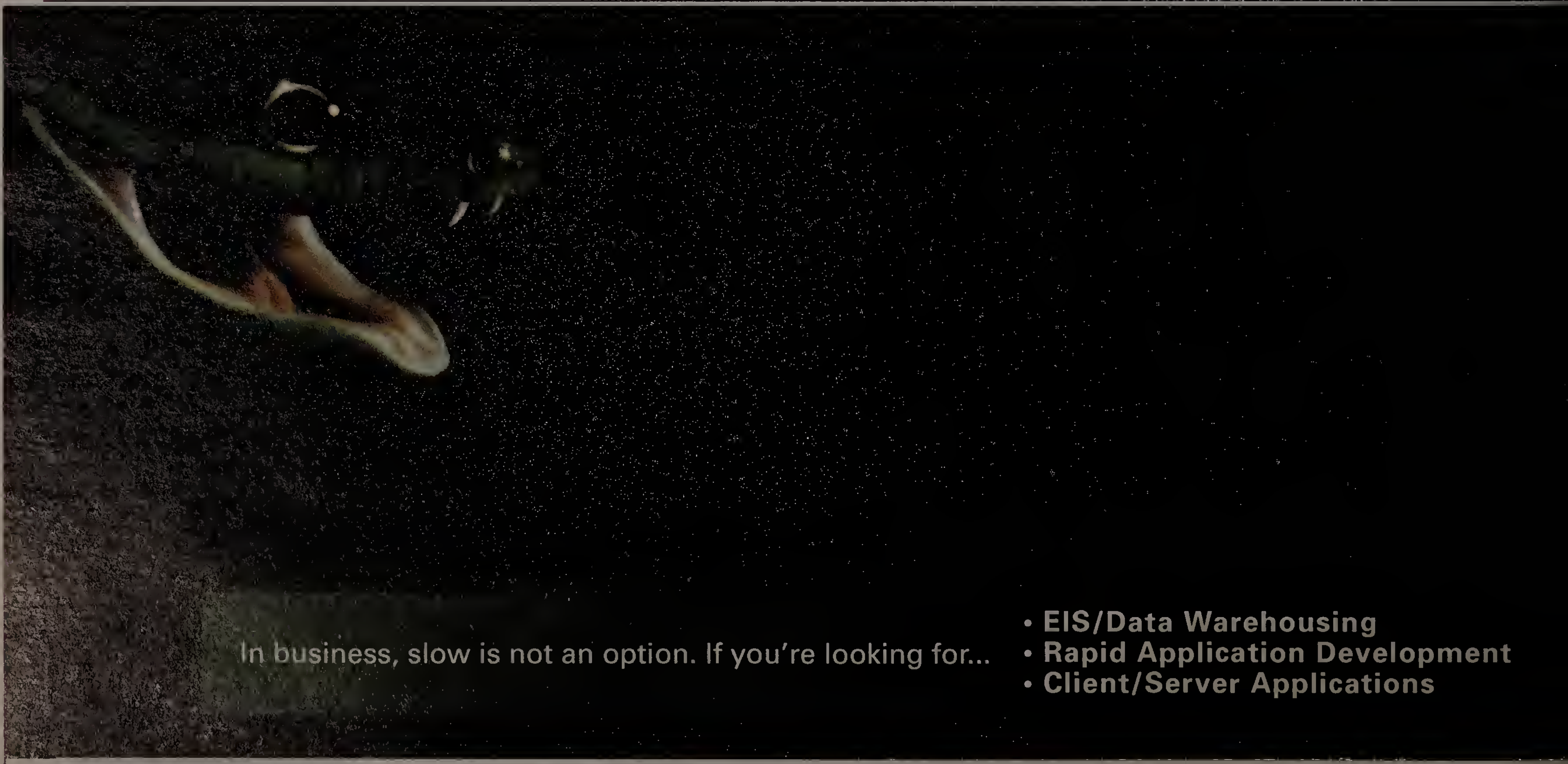
Client/server complications

Edward Machek, group vice president at JMFE's Information Technology Services company, said the move to client/server is painful but inevitable.

The move to client/server has been especially tricky at the automobile conglomerate, a company marked by extreme decentralization and a highly mobile workforce.

"As much as I know we need client/server, it has seriously complicated our lives," he said. "What we've done with client/server is eliminate controllers and dumb terminals but made it vastly more complicated out in the user community."

Machek said it has become harder to protect key computer resources as they become more distributed, mobile and complex. "We have complicated the issue because there are so many more points of failure," he said, referring to the number of decentralized computers at JMFE. He said the decentralized nature of the firm and its peripatetic employees make it hard to lock down key resources. — *Gary H. Anthes*


In business, slow is not an option. If you're looking for...
• EIS/Data Warehousing
• Rapid Application Development
• Client/Server Applications

Speedware Corporation is an international organization with thousands of satisfied customers and products with a proven track record.

Are you getting instant access to the information you need to make critical business decisions easily and accurately?

Introducing Media™: The best Executive Information System and Data Warehousing solution that gives you the ability to visualize, customize, analyze and organize important information, no matter what the source, in exactly the way you want to see it.

Name:________________ Title:________________

Company:________________ Address:________________

City:____________ State:____________ Zip:____________

Phone:________________ Fax:________________

I understand the need for speed. Please rush me the:

☐ demo diskette ☐ send me information

☐ have some one call me immediately

1•800•276•9950

SPEEDWARE

BECAUSE SLOW IS DEAD

SPEEDWARE

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 452 SAN RAMON, CA

POSTAGE WILL BE PAID BY ADDRESSEE

SPEEDWARE USA, INC.
MARKETING DEPARTMENT
3000 EXECUTIVE PARKWAY - SUITE 111
SAN RAMON, CA 94583-9667

Call

Visit us

[illegible]

Angia Communications, Inc. has introduced SafeJack Ethernet, a multifunction PC card.

According to the Provo, Utah, company, SafeJack Ethernet allows simultaneous fax modem (28.8K bit/sec.) and LAN operation and requires no additional specialty cables. It has an adapter that attaches directly to the card and provides sockets for all standard RJ-45 and RJ-11 cables.

SafeJack Ethernet features digital line protection and a 16-character, first-in, first-out buffer. It supports operating systems including Novell, Inc.'s NetWare and Microsoft Corp.'s Windows NT and Windows for Workgroups.

SafeJack Ethernet costs $599.

▶ *Angia Communications*
(801) 371-0488

Microtest, Inc. has introduced CD-Now for Novell, Inc.'s NetWare.

According to the Phoenix company, CD-Now incorporates NetWare 4.1 technology to give integrators and network administrators a foundation for building dedicated CD-ROM servers. It lets users create CD-ROM servers using any industry standard 386-based or higher computer. It provides access to up to 500 CD-ROMs.

CD-Now ships with DiscView Pro, software that permits any user on the network to see and access CD-ROM libraries as NetWare volumes or subdirectories.

CD-Now supports Ethernet and Token Ring Network File System networks, IPX and IP protocols.

It lets DOS, Windows, Macintosh, OS/2 and Unix clients access CD-ROM information, according to the company.

Pricing for CD-NOW starts at $1,495 for a 50-user license.

▶ *Microtest*
(602) 952-6400

Magic Solutions, Inc. has linked its help desk software, SupportMagic for Windows to Notes.

According to the Paramus, N.J., company, the SupportMagic/Notes interface lets Notes users hold an electronic discussion with a help desk technician. Users send electronic requests to a SupportMagic help desk via Notes; the help desk confirms receipt of the message with a return message, which includes a support technician's name and telephone number.

Pricing for SupportMagic for Windows starts at $2,995 for one user.

▶ *Magic Solutions*
(201) 587-1515

Spicer Corp. has introduced Imagenation 3.82, a document imaging tool.

According to the Kitchener, Ontario, company, Imagenation 3.82 is an imaging tool that lets users view, redline, markup and edit documents.

It features area and perimeter measurement capabilities, automatic deskewing, header or footer banners when printing and a "most recently opened file" list.

Imagenation includes computer-aided design (CAD) support. It also features file formats including Delrina Corp.'s WinFax and Microsoft Corp.'s Windows Meta Files.

Imagenation 3.82 is available in Windows, Macintosh and Unix versions.

It costs $199.

▶ *Spicer*
(519) 748-2462

Digital operator gets easier

By Mindy Blodgett

Wildfire Communications, Inc., the Lexington, Mass.-based telecommunications software maker, has made its Wildfire Electronic Assistant easier to use.

Wildfire is a kind of computerized secretary. A Wildfire server sits behind the user's private branch exchange. The software uses a menu of voice commands to handle all incoming and outgoing calls and to filter messages — whether the user is at home or at a pay phone.

Version 1.1 does the following:

- Eliminates the need to train the command set with voice recognition technology. The system will now recognize any person's voice speaking American English, not just the user's voice.
- Allows users to leave private messages for callers.
- Proactively tracks the user's location rather than waiting for the user to inform it of a move.
- Understands recent changes in North America's area code configuration.

Larry Chernoff, president of Encore Video, a Hollywood-based video postproduction company, said Wildfire has become indispensable.

"I do have a secretary, but I am totally mobile, a 24-hour-day businessman," Chernoff said via a cellular phone as he strolled around a construction site. "This product is a telephonic manager; my cell phone acts as a bridge to a virtual office. I don't know how I got along without this."

While the average cost per user has dropped from about $2,000 to $1,500, Wildfire has increased the user configurations and therefore raised prices.

A multiple-port configuration that ranged from $40,000 to $70,000 now costs $50,000 for 25 users and $75,000 for 50 users.

Joel Margolese, product manager, said the company is trying to reduce the system's cost, which he acknowledged is prohibitive for some users.

Faxes, printers

CONTINUED FROM PAGE 45

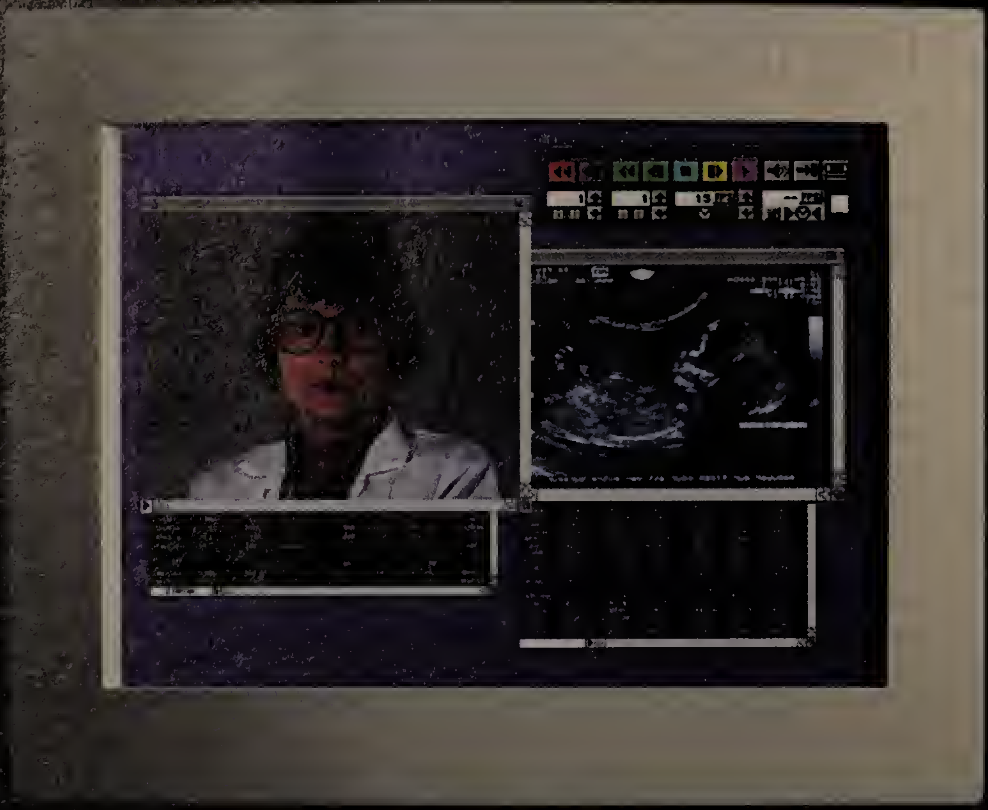
sorts of office equipment on to the network without a lot of configuration headaches, analysts said. Typical configurations don't even need a PC to access data.

For example, one prototype project lets users access a database through a copier — without going through a PC. The database supplies the information for printing in a format the copier can understand and print.

Software developers will be able to create applications based on the specification, which uses the various functions of regular office machines and lets the machines themselves communicate with one another. The specification will be independent of any hardware platform or operating system. Analysts said Novell's inclusion in the group was important because the company already has its own technology — Novell Embedded Systems Technology, which builds a network client into a piece of electronics equipment.

Novell also has a printing and imaging infrastructure in NetWare.

Call us for the speed you need. 1•800•276•9950
SPEEDWARE
BECAUSE SLOW IS DEAD
Visit us on the World Wide Web at: http://www.speedware.com
e-mail: moreinfo@speedware.com



MAJOR
MEDICAL
CENTERS
DEMAND A
CABLING
SYSTEM WITH A
15-YEAR
HEALTH PLAN

One word sums up what America's leading hospitals require of a cabling system. Reliability.

Being famous perfectionists, medical professionals insist on the world's most-tested cable solutions. Backed up by a comprehensive extended product and applications assurance warranty. For a full 15 years.

For the reassurance of a 15-year warranty, top hospitals trust AT&T SYSTIMAX® Structured Cabling Systems.

You get all of this and more with certified AT&T SYSTIMAX® Structured Cabling Systems (SCS).

Created by AT&T and the innovators of Bell Laboratories, AT&T SYSTIMAX SCS represents the industry's most ambitious program of world-class R&D.

Rigorous testing with other vendors' equipment and applications ensures compatibility.

To deliver consistent excellence, our wholly-owned manufacturing facilities are ISO 9001 certified.

AT&T offers a worldwide network of resellers who are thoroughly trained in all facets of cabling technology, design and installation.

Since AT&T SYSTIMAX SCS is designed to answer your current needs and emerging applications, it's virtually future-proof.

In short, everything about AT&T SYSTIMAX SCS is designed for long-term peace of mind. No matter what kind of project you have on the drawing board.

For details, call 1 800 344-0223, ext. 5064. Outside the U.S., call 602 233-5895. Or visit us at http://www.att.com/nst/

AT&T SYSTIMAX SCS
THE LAST CABLING SYSTEM
YOU'LL EVER NEED

AT&T
Network Systems

© 1995 AT&T

LAWSUIT GOOSES ON-LINE RIVALS, 54
3COM, CHIPCOM GET DOWN TO BUSINESS, 56

Enterprise Networking

INTERNETWORKING • SERVICES • NET MANAGEMENT

Simware's tool slashes NetWare migration time

By Laura DiDio

Users looking to upgrade to Novell, Inc.'s NetWare 4.1 may find that a new migration tool kit makes the task 70% faster and mistake-free.

Simware, Inc.'s Rexxware Migration Toolkit is software that runs as a NetWare Loadable Module (NLM) on any NetWare 3.x or 4.x server, said Chris Fedorko, Simware's vice president of marketing in Ottawa. The kit, which is shipping now, was designed to automate the often tedious task of upgrading to the new and more complex NetWare 4.1 environment.

Migration made easier

Simware's Rexxware Migration Toolkit is software that runs as a NetWare Loadable Module and helps users migrate to NetWare 4.1. It features the following:

- Menu-driven standard NetWare user interface
- Automated migration capabilities to cut upgrade time up to 70%
- Capabilities to allow users to deploy fewer servers by consolidating user IDs, passwords and files
- No disruption of networks during testing and upgrade
- Requires few administrators to manage
- Lets administrators preview new network setup before moving files

Migration made easy

The Rexxware Migration Toolkit NLM delivers six features to accelerate and bomb-proof the migration process for users:

- Auditing, which delivers customized reports about all devices on NetWare 3.x networks.
- Network Modeling, which lets managers create a test network off-line without disrupting ongoing network activities.
- Importing information off-line in an automated fashion in English text-based commands and making NetWare Directory Service (NDS) a usable database from the onset.
- Batch Editing, which enables NetWare administrators to search the database for common objects and assign attributes for all users at the same time.
- Discovery and management of duplicate network objects allows administrators to merge identical 3.x objects into a single NDS object.
- Phased-in Migration, which lets administrators upgrade to NetWare 4.1 in a "trial run" mode.

Early beta users report that the Rexxware Migration Toolkit lives up to its press. Nick Earle, network operations manager at the Sema Group, an information technology firm in the UK, reported that the Rexxware Migration Toolkit resulted in a 150% cost savings and a 73% faster NetWare 4.1 upgrade for its 2,000 users.

The reporting capabilities of the Rexxware Migration Toolkit provided the Sema Group with a detailed description of all of the devices and users across the enterprise. It calculated how much disk space is on every server at every Sema Group site.

Big savings

"It took us 19 days to migrate our entire corporation to NetWare 4.1, compared with an estimated 75 days to upgrade if we had just used the tools provided with NetWare. We saved an estimated $58,500 in terms of manpower hours and productivity, and it was a low-risk migration," Earle said.

Another beta user, Fleming Eleboe, a principal at Abbacor Ltd., an independent systems integrator in Toronto, is using the Rexxware Migration Toolkit to upgrade 2,500 users at a major Southeast telecommunications carrier.

"The Rexxware Migration Toolkit does exactly what it's supposed to do: It prevents me from making time-consuming and costly mistakes and gives me the ability to explore and manipulate an off-line copy of NetWare Directory Services," Eleboe said.

The Rexxware Migration Toolkit NLM is available now. It costs $795 per server.

[redacted]

Cylink Corp. has introduced SecurePocket Traveler, a dial-up network security device.

According to the Sunnyvale, Calif., company, SecurePocket Traveler is a palm-size device that provides automatic network access, authentication, integrity and encryption. It inserts between a PC and a modem, and its operation is transparent to the user, modem and host.

SecurePocket Traveler uses industry standard X.509 certificates that provide a means for automated key distribution for large-scale networks as well as access, authentication and integrity. It works with a 110V or 220V AC adapter or a universal 9V power supply.

Pricing for SecurePocket Traveler starts at $330.

▶ *Cylink*
(408) 735-5800

Telebyte Technology, Inc. has unveiled the PC Comscope 904, a protocol analyzer that interfaces with a host PC to access its resources.

According to the Greenlawn, N.Y., company, the PC Comscope 904 supports all PCs in a small, portable configuration and provides the capability of a high-performance communications data line monitor, emulator and bit error rate tester.

It can be added to any PC by connecting the supplied cable to any available serial port without any configuration.

The PC Comscope 904 supports most wide-area network protocols and includes full emulation capabilities. For portable field operation, the PC Comscope 904 runs for two hours on a standard 9V battery.

The PC Comscope 904 costs $499.

▶ *Telebyte Technology*
(516) 423-3232

Bay to flick LAN switch

By Bob Wallace

Bay Networks, Inc. will soon offer users the best of both worlds in Ethernet and Token Ring switching.

Bay's Centillion 100 switch will give users with overburdened Ethernet and Token Ring LANs a new lease on life by adding Ethernet switching to its Token Ring-to-Asynchronous Transfer Mode (ATM) switch. Bay has equipped its Token Ring switch with a new multiport 10M bit/sec. Ethernet EtherSpeed switching module. The switch can support a maximum of 88 ports for $6,495, or $466 per port.

"That's certainly not the lowest price per Ethernet switch port, but it's fairly competitive," said Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy. "And it's lower than that of switches [that] support more than one type of LAN switching."

More choice

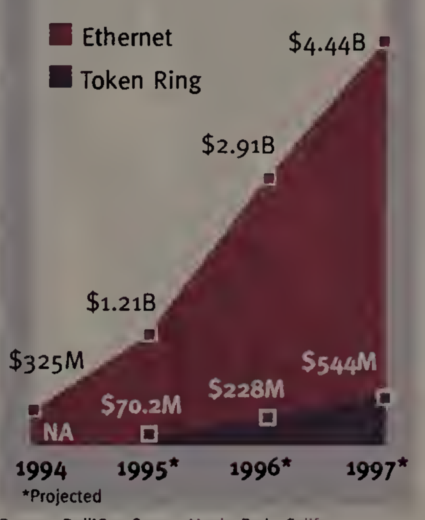
The significance of Bay's move is twofold: LAN switches give Ethernet and Token Ring users a choice between bandwidth dedicated to one user per port or bandwidth dedicated to several users on small subnetworks.

"Users want a single versatile switch to do everything rather than buying a Token Ring switch, an Ethernet switch and an ATM switch and integrating them themselves," Nolle said. "And virtually all Token Ring users have Ethernets, too."

Double duty

Bay's Centillion 100 is one of the first products to integrate Ethernet and Token Ring switching in one chassis

Revenue for LAN switching and segmentation products by type:



Source: Dell'Oro Group, Menlo Park, Calif.

One planned beta site for EtherSpeed is excited about Ethernet switching support in the Centillion 100.

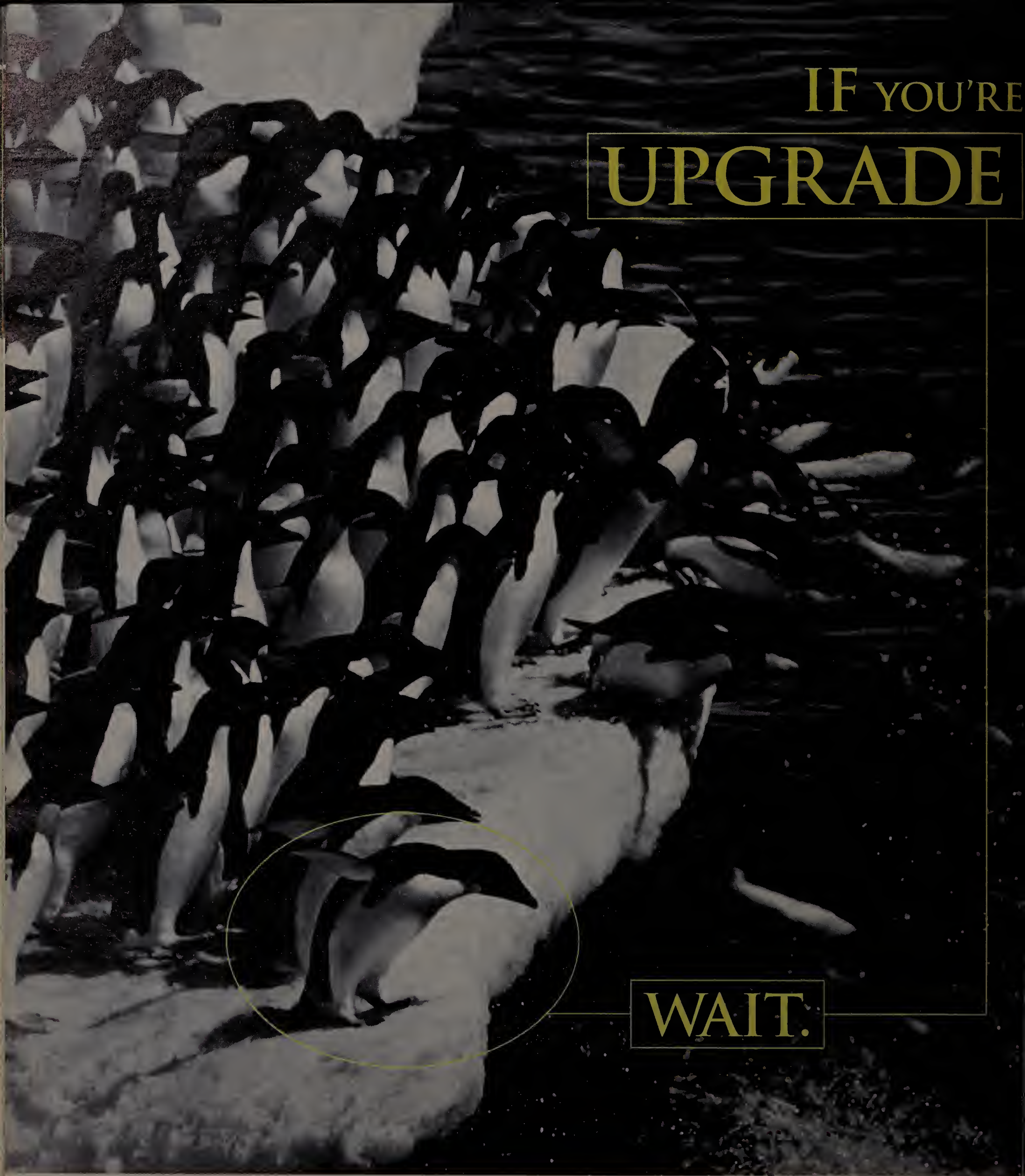
"The biggest benefit is that the switch combines two LAN switching technologies in one chassis, which is equipped with an ATM switching fabric," said Larry Boggis, a senior analyst at Carolina Power & Light Co. in Raleigh, N.C. "Our company is 80% Token Ring now, though new sites are being equipped with Ethernets, so we need to support both."

Bay positioned itself to offer an integrated Ethernet/Token Ring/ATM switch by acquiring start-up Centillion Networks, Inc. in May for roughly $140 million. The latter was the first to market with a Token Ring switch. Centillion now operates as an independent business unit of Bay.

This switch, the first of its kind, will pressure rivals, Nolle said. "Cisco has the technology but only single-mode products," he said. "By comparison, 3Com offers Token Ring switching on its expensive and high-end LANplex switch. Both vendors will need to respond quickly with an inexpensive product."

Single-mode products support one type of LAN switching.

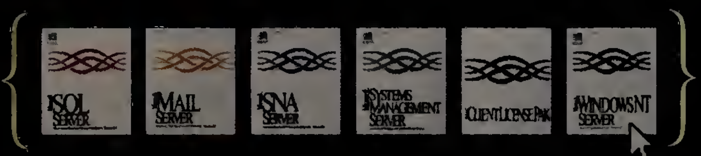
The 16-port EtherSpeed can enable the Centillion 100 to provide sustained throughput of more than 1 million packets per second. The device automatically learns and caches up to 16,000 media-access control addresses in memory.



Microsoft offers flexible, cost-effective options for licensing BackOffice products. Acquire a Server License for the product and a Client Access License for each client computer that accesses the product. A Client Access License allows a computer to access the product on any server on the network. Since usage patterns may vary, a concurrent use option is also permitted. ©1995 Microsoft Corporation. All rights reserved. Microsoft is a registered trademark and *Where do you want to go today?* and Windows NT are trademarks of Microsoft Corporation. Macintosh is a registered trademark of Apple Computer, Inc. DEC and Alpha AXP are trademarks of Digital Equipment Corporation. NetWare and Novell are registered trademarks of Novell, Inc. PowerPC is a trademark of International Business Machines Corporation. UNIX is a registered trademark in the United States and other countries, licensed exclusively through X/Open Company, Ltd. Intel is a registered trademark of Intel Corporation. MIPS is a registered trademark of MIPS Computer Inc. Oracle is a registered trademark of Oracle Corporation. Sybase is a registered trademark of Sybase Inc.

PLANNING TO YOUR NETWORK,

Before you plunge into your next network upgrade, you ought to consider your options. To be competitive today you need more from your network than file-and-print. You also need reliable access to mission-critical business information. You need Windows NT™ Server, the best upgrade option for your NetWare® system.

Windows NT Server is designed to fit right into your existing NetWare environment. So instead of rip-and-replace, you can add-and-augment. And get a powerful multipurpose network operating system that offers exceptional file-and-print capabilities, plus directory services, plus the ability to run more than 1,300 business applications. ● As the foundation of Microsoft® BackOffice, Windows NT Server offers full support for robust databases, host connectivity, messaging and systems management: 

With its advanced microkernel architecture, protocol independence, and consistent support for applications, Windows NT Server is the platform for networking and client-server applications. A combination that can serve your business well into the next century. ● So if you're planning to upgrade your network, make sure you have the facts. (There are more than a few listed on your right.) Then contact your nearest reseller, or any of those listed below, for a 10-user Network Value Pak. Yours for only $999 ($839 for you NetWare upgraders). Need more details? Call (800) 434-3982, Dept. HNM.

MULTIPURPOSE SERVER

FAST FILE & PRINT
(PROTOCOL INDEPENDENT, INCLUDING NETWARE)

GENERAL APPLICATIONS
(1,300 AT LAST COUNT)

DATABASES
(MICROSOFT, ORACLE,® SYBASE,® ...)

COMMUNICATIONS
(DIAL-IN NETWORK ACCESS, ISDN, SNA)

INTEGRATED MESSAGING

●

INSTALLATION & ADMINISTRATION

EXPRESS SETUP
(HARDWARE DETECTION, DRIVERS ON CD-ROM)

UPGRADE TOOLS
(NETWARE, LAN MANAGER)

DIRECTORY SERVICES
(CENTRALIZED ADMINISTRATION, SINGLE LOG-IN TO NETWORK)

DESIGNED FOR C-2 LEVEL SECURITY
(SERVER AND NETWORK)

●

OPEN PLATFORM

PROTOCOL INDEPENDENT
(TCP/IP, IPX/SPX, NETBEUI, DLC, ...)

NETWARE SUPPORT
(FILE & PRINT SERVICE, GATEWAY SERVICE, IPX/SPX)

MACINTOSH® CLIENTS
(NO SPECIAL SOFTWARE REQUIRED)

UNIX® AND INTERNET
(FTP, DNS, WWW, GOPHER READY, ...)

PROCESSOR INDEPENDENT & SMP READY
(INTEL,® DEC™ ALPHA AXP,™ MIPS® R4X00, POWERPC™)

Corporate Software	Egghead	Softmart	Dell
(800) 808-1667	(800) EGG-1123	(800) 243-6292 ext. 817	(800) 449-3355

Microsoft®
WHERE DO YOU WANT TO GO TODAY?™

Lawsuit gooses on-line rivals

Microsoft Network debate prompts changes at CompuServe, Prodigy

By Elinor Mills
SAN MATEO, CALIF.

The U.S. Department of Justice may decide Microsoft Corp.'s decision to bundle The Microsoft Network with Windows 95 is anticompetitive, but early indications are that it looks very good for old-fashioned competitive fervor — and for Internet users.

CompuServe has gone through years of having "a lousy interface and being way overpriced."

On-line providers CompuServe, Inc. and Prodigy Services Co., trying to preempt their new rival, recently announced significant enhancements to their on-line services, promising user- and Internet-friendly interfaces.

"CompuServe, especially, was in dire need of not only a facelift, but a restructuring of its pricing strategy," said Ted Julian, an analyst at International Data Corp. in Framingham, Mass. CompuServe's history, numerous forums and technical users "have carried them through years of having a lousy interface and being way overpriced," he said.

A new look

CompuServe in Columbus, Ohio, introduced CompuServe Information Manager (CIM) 2.0, which features an integrated World Wide Web browser. In addition, CIM 3.0, due early next year for Windows and Macintosh users, will feature a graphical user interface design that is more intuitive and colorful than its current one, the company said.

CompuServe also cut its prices. Effective Sept. 10, pricing will drop from $4.80 per hour to $2.95 per hour, and there will no longer be charges for "extended" services or Internet mail. Users will get five free hours of access.

User friendly

Meanwhile, White Plains, N.Y.-based Prodigy announced a Windows-based interface that uses Hypertext Markup Language to let users connect directly to the Web. It also includes other Internet access features. The software became available to Windows users for free last week and will be available to Macintosh users later this year.

The interface features more icons and new fonts in a scrollable Windows format. A "go to" window allows users to type in and immediately go to any Web home page, Internet Gopher or file transfer protocol site, Usenet newsgroup or Prodigy feature. The cost will stay at $9.95 per month for five hours, with additional hours costing $2.95.

Prodigy also plans to do the following:

- Offer software that will allow parents to block access to chat, Usenet newsgroups and the Web and to monitor activity by recording the date, time and name of all Web sites visited. Currently, parents can block access to bulletin boards.
- Create more than 50 interest groups for forums as well as allow subscribers to open up a community Web site.
- Allow members to choose their own personal Internet electronic-mail addresses beginning later this month with no charges for sending or receiving E-mail. Alphanumeric IDs will still be used to access Prodigy.
- Replace advertisements at the bottom of most screens with icons that reveal advertisements when they are clicked on.
- Offer a new version of the Personal Pages home page creator that will enable users to add photos, graphics and sound to their pages. This will be available in a few months.
- Roll out 28.8K bit/sec. modem service around the U.S. at no additional charge later this year.

The more you play, the more you pay

SERVICE	BASIC RATE	ADDED PRICING
America Online	$9.95 per month for five hours	$2.95 each additional hour
CompuServe	$9.95 per month for five hours*	$2.95 each additional hour
Prodigy	$30 for 30 hours per month, or five hours for $10	$2.95 each additional hour
The Microsoft Network	$4.95 for three hours	$2.50 each additional hour

*New pricing starts Sept. 10

Mills is a U.S. correspondent for the IDG New Service.

http:

It's August. It's hot. Maybe you've been in the sun too long and could use some artificial intelligence.

If so, surf over to **http://www.cs.cmu.edu/Web/Groups/AI/html/air.html**. There you will find some light beach reading such as Cellular Automata FAQ. According to Gleason Sackman, moderator of the "Net-Happenings" Usenet news group, it is the most comprehensive collection of free artificial intelligence, LISP and Prolog materials on the 'net.

If your most frequently asked questions (FAQ) have more to do with other companies, two new Web sites are worth visiting. A directory of North American Chambers of Commerce, with links to related business-oriented sites, can be found at **http://www.chamber-of-commerce.com/**. Also try **http://www.thomasregister.com** for access to the 150,000-company Thomas Register of American Manufacturers. You can do free searches for products and services from 52,000 categories.

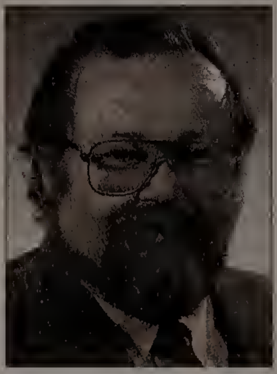
The Cross-Industry Working Team, a group of 40 large users and vendors of information technology, recently published its third report "Nomadicity on the National Information Infrastructure" and posted it to **http://www.cnri.reston.va.us/xiwt**. A FAQ will be, "What is nomadicity?" Answer: the ability to move from place to place while retaining a rich set of computing and communications services. The report is a bit academic – there is talk of "paradigm shifts" – but it represents the collective thinking of the key players on the information highway.

Another industry group, the Computer Systems Policy Project (CSSP), just announced its Web site at **http://www.intr.net/dc-online/cspp/**. It contains the latest news about the CSPP – an alliance of the CEOs of 13 major computer companies – full text of reports put out by the CSPP and links to other sites having to do with the National Information Infrastructure, technology and trade policy.

Arizona State to develop 'net primer

By Gary H. Anthes
TEMPE, ARIZ.

The General Services Administration in Washington recently awarded Arizona State University $2.5 million to develop a training program in Internet use for government workers. Under the Clinton administration's National Performance Review, the GSA was given responsibility for governmentwide training on the Internet.



ASU's *William E. Lewis says there is high demand for Internet training*

Meanwhile, Arizona State was getting swamped with requests for training students, faculty, administrators and community people on how to get on-line.

"We couldn't keep up with demand," said William E. Lewis, vice provost for information technology. "So we jumped at the chance to get paid for this."

"This" is a 10-person-year, multipart project that will deliver to the government a set of Internet training materials in February. The materials include a training videotape, a floppy disk with software to download public domain programs and a CD-ROM containing software for browsing the World Wide Web and other tools for Internet use.

Lewis said the materials will be used by the government to train policy-makers and other employees and the university for training at Arizona State and other Arizona public schools.

"Ninety [percent] to 95% of this material is independent of the audience," he said.

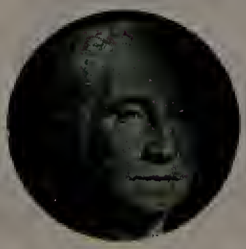
Thirsting for more info?

Arizona State University's Internet training program will be available to government users as well as the public on the World Wide Web. In the meantime, news about the project can be found at the following address: http://www.asu.edu:80/gsa/.

GSA won't actually conduct Internet training but will make the materials available to other agencies, said Ron Piasecki, deputy commissioner for GSA's Office of Emerging Technology.

Because Internet content and access methods change so often, the university won't attempt to maintain the videotape and disks in a state-of-the-art form. Instead, the university is setting up a Web site at which government officials and the public can stay abreast of the latest in Internet usage techniques. Lewis acknowledged that he has an advantage not enjoyed by the corporate world — cheap labor. Most of the Internet training program is being developed by Arizona State undergraduates, he said.

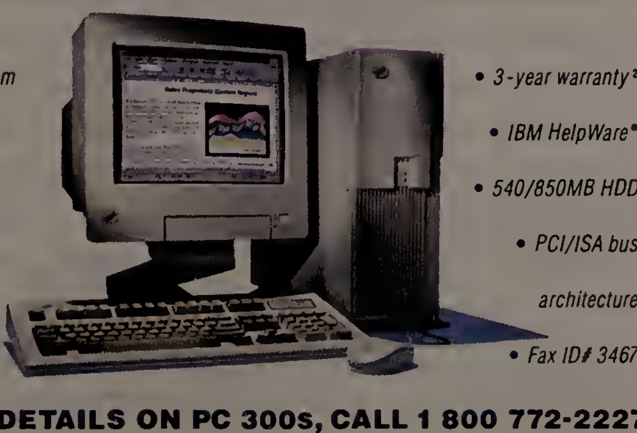
"Surprise me. Give me more power than I thought I could get for my money."



IBM Solution # 111163-J **a.k.a. "Affordable Pentium Technology"**

If you're looking for a lot of performance for not a lot of money, consider the new IBM PC 300. Pumped up with a 75 or 90MHz Pentium® chip and 64-bit graphics, it delivers all the speed and functionality you need for off-the-shelf or customized applications. And it starts at just \$1825¹ (monitor not included). Which means you can take on the heavy stuff without getting in over your head. The IBM PC 300. One more reason there is a difference.™

- *75/90MHz Pentium processors*
- *SelectaSystem:™ DOS/Windows™ and OS/2® Warp*
- *64-bit graphics*



- *3-year warranty²*
- *IBM HelpWare®*
- *540/850MB HDD*
- *PCI/ISA bus architecture*
- *Fax ID# 3467*

FOR MORE DETAILS ON PC 300s, CALL 1 800 772-2227*

IBM

¹Entry-level PC Direct price for 75MHz/540 HDD. Dealer prices and product availability may vary. ²IBM's Statement of Limited Warranty is available upon request by calling 1 800 772-2227 *In Canada, call 1 800 465-7779. IBM, OS/2 and HelpWare are registered trademarks and SelectaSystem and "There is a difference" are trademarks of International Business Machines Corporation. Pentium is a registered trademark of Intel Corp. Windows is a trademark of Microsoft Corp. ©1995 IBM Corporation.

3Com and Chipcom get down to business

Strategy for integrating products begins to emerge

By Laura DiDio

Now that Cabletron Systems, Inc. has dropped its counterbid and the recent media hoopla has died down, 3Com Corp. and Chipcom Corp. have real work to do.

The companies are busily devising plans to integrate their respective devices into a single, cohesive product suite.

3Com's forthcoming acquisition of Chipcom for a stock swap estimated at $775 million is due to be completed in late October. Until that happens, both companies will maintain the status quo with their product lines.

One user, Carlos Negrete, director of network services at Pacific Health Care Systems, Inc. in Cypress Hills, Calif., said he is confident that "3Com will manage the acquisition smoothly and with little disruption in service to its installed base."

While many details remain to be hammered out, the products likely to be shelved include Chipcom's mature, modular Galactica hub and 3Com's LinkBuilder line of hubs, said Bob Finocchio, vice president and general manager of 3Com's Networks Systems Group.

MERGER

But Finocchio and outgoing Chipcom President Rob Held promised that users won't be left in the lurch.

"The Galactica is at the end of its life cycle; it will be phased out over time but we will continue to service and support it," Finocchio said.

"The mesh between the two companies is as close to perfection as you can get."

— Charlie Robbins, analyst, Aberdeen Group

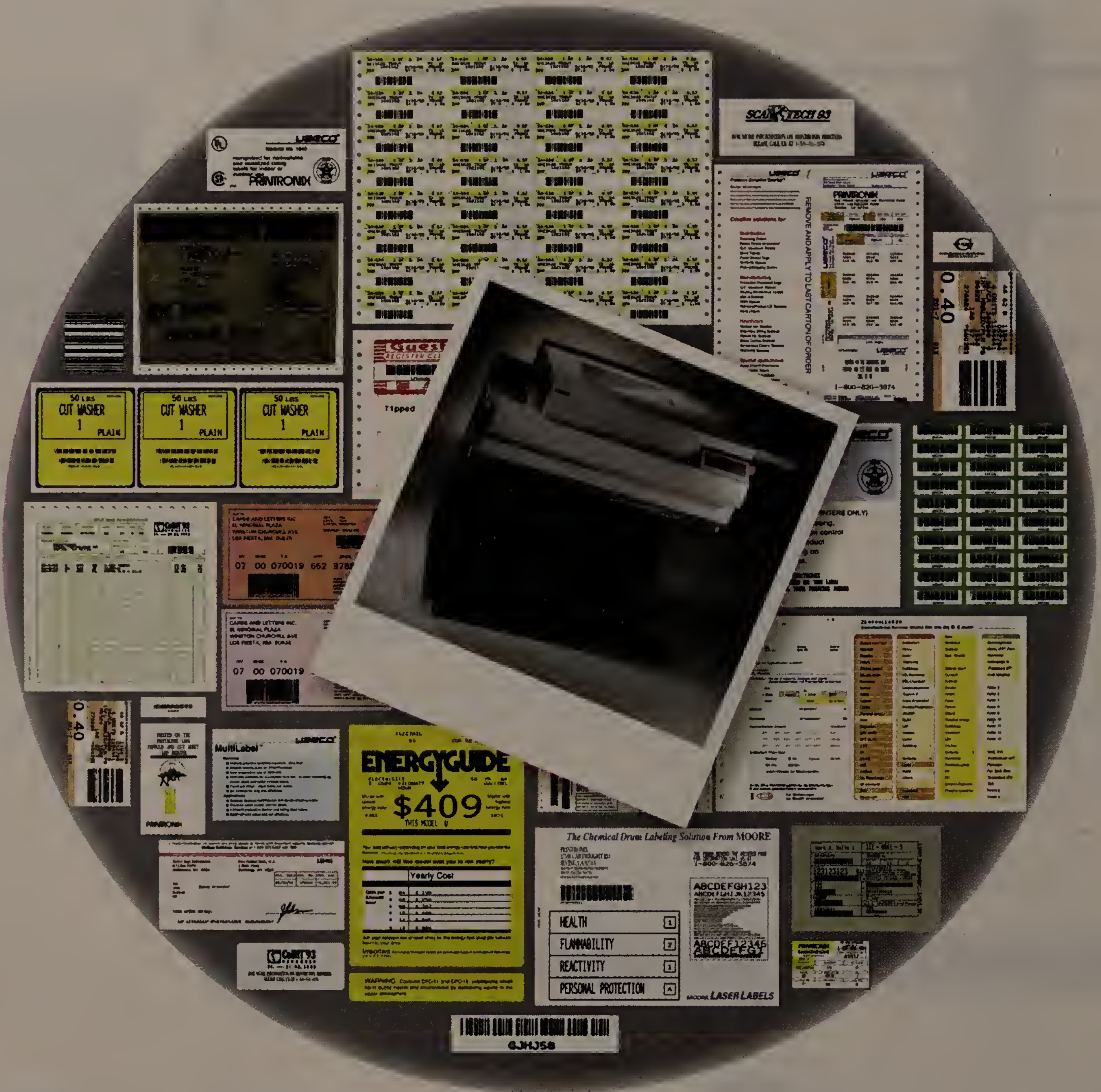
On the way

Other early product decisions include the following:

- The OnCore switching hub will become 3Com's premier high-end offering and will be enhanced with 3Com technology in the next six months. Finocchio called the OnCore line "the locus and focus" of many Chipcom customer relations, including the reseller pact with IBM. That pivotal pact calls for IBM to codevelop and resell Chipcom's high-end line of OnCore switching hubs.

The continuation of the IBM alliance is equally crucial to 3Com's plans because it gives the company a much needed "foot in the door" in Big Blue accounts, said Charlie Robbins, an analyst at the Aberdeen Group, Inc., a Boston consultancy. "The mesh between the two companies is as close to perfection as you can get. The biggest hurdle they now face [is] melding their respective network management offerings; they may have to buy some pieces."

- 3Com will continue to develop and enhance its existing backbone offerings, the CellPlex Asynchronous Transfer Mode data center class switch and the single-function LANPlex Switch.
- Over time, Chipcom's Onsemble stackable offering will be integrated with 3Com's SuperStack, Finocchio said. Near term, 3Com will continue to build both products.
- 3Com will also bundle Chipcom's OnDemand network management software with its own Transcend management suite and sell the product under the Transcend label. The next revision of Transcend, due out by year's end, will contain some elements of OnDemand, Finocchio said.



The perfect departmental printer would need to be well-rounded.

Picture a mid-range departmental printer that prints laser quality images on both continuous form and cut sheet stock. On pre-printed forms or electronic forms you create. And prints on just about any media you can think of—2-up customer statements, checks, invoices, barcode labels, pick lists and hang-tags. In fact, everything you see in the visual above and a lot more. Imagine features like DuraFusion™, a unique flash fusing toner system that prints incredibly tenacious images on all sorts of materials. And while you're at it, add affordability, a workhorse duty cycle and speeds up to 31-pages per minute. The perfect departmental printer. It's called the L5031 MultiFunction Printer and it's here now, ready to round out your printing capability. You can see it in action in a free video that's yours for the asking.

90 YEARS

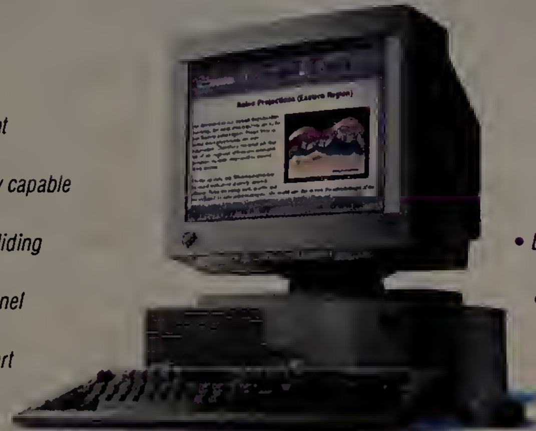
PRINTRONIX™
What will we think of next.

For more information, write, call or fax: Printronix, P.O. Box 19559, Irvine, CA 92713; Telephone **(800) 665-6210**; Fax (714) 660-8682
DuraFusion is a trademark of Printronix. © 1995 Printronix

"I'm not paranoid. I just want to make sure my files have 24-hour protection."

IBM Solution #50258-W

a.k.a. "Tamper-proof Security"



Short of putting a team of attack dogs on permanent office patrol, there's no better way to protect your data than with IBM security. Why? Because every IBM PC 700 has (among other things) a full system of safeguards designed to prevent unauthorized access to diskettes, CD-ROM units and PCMCIA cards. A system that effectively keeps intruders and viruses out. And precious files and assets in. The PC 700. One more reason there is a difference.™

- *Government C2 security capable*
- *Lockable sliding security panel*
- *Tamper-alert covers*

- *New, sharper, brighter color monitor*
- *LogicLock™ protection*
- *Multilevel password protection*
- *Fax ID# 3468*

FOR DETAILS ON PC 700s, CALL 1 800 772-2227*

*In Canada, call 1 800 465-7999 Product availability may vary IBM is a registered trademark and LogicLock and "There is a difference" are trademarks of International Business Machines Corporation. ©1995 IBM Corporation.

Analysts agree, our new Symmetrix 5100 comes with something IBM's RAMAC can't offer.

A real future.

To be brutally honest, we don't understand why any organization would invest time, energy and money in a storage system with a limited future.

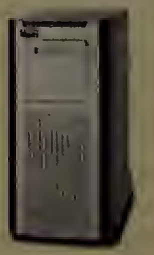
A storage system whose controller capacity has been capped and deemed by analysts to be "at, or near, the end of its life." A system the experts have labeled a "pea shooter" compared to EMC's "howitzer."

RAMAC

The weapon we're referring to is Symmetrix® 5100, which has the capacity to let you start at 34 gigabytes and get as big as your future will allow – all thanks to our unique modular architectural approach, MOSAIC:2000®. Plus, the 5100 gives you higher performance, lower cost of ownership and our exclusive Symmetrix Remote Data Facility.

5100

RAMAC's future is fading. Learn why, with Symmetrix 5100, your future is brighter than ever. Call 1-800-424-EMC2, ext. 217, for a free interactive information kit.



PERFORMANCE IS MAXIMIZED BY A FACTOR OF EMC^2

THE STORAGE ARCHITECTS

EMC^2, Symmetrix, MOSAIC:2000 and THE STORAGE ARCHITECTS are registered trademarks of EMC Corporation. All other trademarks are the property of their respective owners. ©1995 EMC Corporation. All rights reserved.

ITT Hartford looks toward data mining, 60
New products, 60

IBM hits roadblocks

Company postpones shipments of its mainframe, Unix versions of high-capacity Magstar tape drive

By Craig Stedman

IBM isn't getting off to an auspicious start in its attempt to become a more worthy rival to mainframe tape drive market leader Storage Technology Corp.

In fact, turmoil appears to be the order of the day at IBM's underachieving tape storage operation. The company recently postponed shipments of both the mainframe and Unix versions of its new high-capacity Magstar tape drive, a critical product that was designed to replace 3480/3490 technology.

Delays abound

The Unix-based Magstar was supposed to debut in late July, but it was delayed until Oct. 1 because of reliability problems with IBM's automatic cartridge loader. Release of the mainframe version slipped from late this year to mid-1996 after IBM consolidated the project into its disk unit — where tape is playing second fiddle when it comes to resource allocation, company officials said.

IBM eliminated its upper-level tape managers as part of the consolidation, and industry sources said wider layoffs appear to be in the offing at its tape facilities in Tucson, Ariz. A spokesman at IBM's Storage Systems division said unit officials had "nothing to say" about possible layoffs.

All of these changes add up to bad news for IBM as it tries to retake the tape initiative from StorageTek, says Carl Greiner, an analyst at Meta Group, Inc. in Stamford, Conn. "Magstar is their new banner for tape, and they're setting a bad direction for it," Greiner said. "It's not a nice trend."

"It sounds to me like tape's relative priority in the world may be changing [at IBM], but it's hard to tell how much," said Bill Neuser, manager of capacity planning and support at Great Western Bank in Northridge, Calif. The bank has two of IBM's high-end 3495 tape libraries and is on a customer steering committee that provides feedback to IBM on its Magstar plans.

Neuser said the delay on the mainframe Magstar won't affect Great Western's plans to buy the drive — provided a key feature that enables many small data sets to be stored on the 10G-byte Magstar cartridges still becomes available in mid-1996 as previously promised.

The so-called volume stacking feature "is something we're keenly interested in," Neuser said. The ability to fill the cartridges with multiple data sets should allow Great Western to greatly expand its tape storage capacity without having to buy more libraries, he added. Without volume stacking, Magstar would be of limited use at the bank.

Kent Winton, vice president of marketing at IBM's storage division in San Jose, Calif., said the shipment delay should have "no impact" on development of the volume stacking capability. IBM now wants to have volume stacking ready at the same time the mainframe version of Magstar is released, he said.

That "hopefully" will be in the first half of 1996, but IBM won't resolve the shipment plans for another 60 days, Winton said.

Getting priorities straight

Magstar "is suffering some pangs of resource and priority allocation right now because our absolute highest priority is to get our new disk controller out," he added. The mainframe disk device, called Scastar, is also targeted for mid-1996 release.

IBM's share of mainframe tape drive shipments fell from 26.8% in 1993 to 24% last year, while StorageTek increased its share from 56.6% to 58.2%, according to International Data Corp. in Framingham, Mass. But users who have avoided IBM tape drives in the past have said Magstar may recapture their interest.

"We haven't bought any IBM tapes, and as heavily oriented to IBM as we are, that probably says something," said Joe Waynick, assistant vice president of technical support at Union Bank in Monterey Park, Calif. The bank instead uses tape products by Memorex Telex N.V. However, Magstar "is something we'll look at seriously down the road" because of its capacity, Waynick said.

Tape measure

A comparison of IBM's Magstar tape drive with existing 3480/3490 technology:

Uncompressed capacity – Magstar supports 10G bytes of uncompressed data, a twelvefold increase over the 800M-byte capacity of the 3480 and 3490 models.

Data transfer rate – Magstar transfers up to 9M byte/sec. That compares with a 6M byte/sec. rate for StorageTek's TimberLine, the fastest 3490-class drive.

Recording method – Magstar blends conventional longitudinal recording with a serpentine interleave feature that lets it write 128 tracks per cartridge. The 3480/3490 drives max out at 36 tracks.

SAP AG bridges shop floor, IS gap

By Julia King

SAP AG's new module for funneling data from shop floor machines into its R/3 client/server software bridges a longstanding information gap, according to users and consultants who have test-driven the software.

But process manufacturers should allow at least a year to get the system up and running in production mode. Proper installation requires substantial mapping and remapping of workflows, which can take months, observers said.

Also, experienced SAP consultants — particularly ones with solid manufacturing expertise — are in short supply.

"There aren't a lot of people walking around who understand the detailed requirements of process manufacturing," said Keith Belton, a principal at Benchmarking Partners, Inc., a consulting firm in Cambridge, Mass.

All in one

PPPI, which stands for production planning process industries, is SAP's latest bid to integrate virtually all of a company's operations under R/3. Aimed specifically at process manufacturers, such as chemical and pharmaceutical companies, it ties process control systems to production planning and business systems.

Process control systems regulate shop floor devices such as valves and temperature gauges. PPPI also links to manufacturers' laboratory information systems.

PPPI offers users a 50% to 60% increase in functionality, according to Udo C. Edelmann, director of SAP's Process Industry Center of Excellence. Pricing will include a surcharge of between $50,000 and $100,000 on a company's current SAP software coupled with a per-user licensing fee. PPPI is scheduled to ship before year's end, the same time frame SAP has set for Release 3.0 of its R/3 client/server software.

What makes PPPI especially time-consuming to implement, observers said, has partly to do with the complex nature of shop floor processes themselves. Changes in both automated and manual tasks always involve a certain amount of risk because of their domino effect on other processes farther down the production line.

"If you're going to get to the ultimate of all process control, with computers talking in real time to PPPI and then messaging information back down to the factory floor to make changes on the fly, it's going to take time," said Clive H. Weightman, vice president of professional services at ICS Deloitte in Chadds Ford, Pa. Before joining ICS Deloitte earlier this year, he was a manager of SAP implementation at ICI Corp., a global chemical manufacturer and also a PPPI beta site.

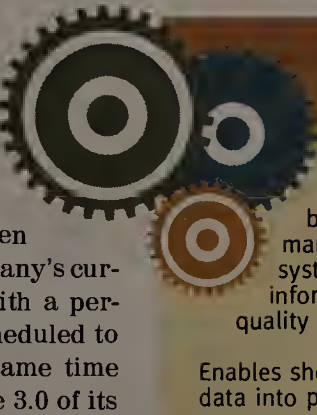
Customers shouldn't expect to implement production systems for nine to 12 months, he added.

Slow and steady

"It has been an evolutionary process for us," said Bruce Williams, an internal consultant at St. Louis-based chemical manufacturer Monsanto Co., a PPPI beta site for the past 14 months. Monsanto is scheduled to go live with PPPI this week.

Williams said Monsanto is deploying PPPI to shrink cycle times and better manage its supply chain.

One of the ongoing PPPI implementation tasks, Williams said, is sorting through the software's seemingly limitless base of options, then mapping them to the company's existing procedures or changing processes and procedures.



PPPI does the following for process manufacturers:

Provides an interface between process manufacturers' factory floor systems and laboratory information systems to facilitate quality control checks.

Enables shop control systems to funnel data into production planning and resource management systems.

Combines information about manual and automated shop floor operations, providing an integrated view of the overall manufacturing process.

ITT Hartford looks toward data mining

By Thomas Hoffman
SIMSBURY, CONN.

This week, another piece of ITT Hartford Insurance Cos.'s data warehousing plan will fall into place as the company finishes the first phase of an AT&T Corp. frame-relay network rollout.

The frame-relay network will replace point-to-point dedicated circuits but will coexist with a Digital Equipment Corp. DECNet wide-area network, giving 500 claims staffers throughout ITT Hartford's Employee Benefits Division (EBD) easier remote access to the company's claims databases. The move should help ease bandwidth demands on the corporate network, according to David H. Annis, vice president of the EBD Business Systems unit.

ITT Hartford's frame-relay plans map with the insurer's May launch into data warehousing. Annis said data warehousing can help EBD's marketing staff, for example, improve its cross-selling capabilities with customers by simplifying access to a variety of corporate databases.

Moving ahead

In another step forward, EBD will begin testing later this month the parallel server capabilities in Oracle's 7.1x relational database management system, powered by a two-processor Digital Alpha 2100 machine, according to Annis.

"Data warehousing is very attractive for insurance companies because you can leverage your data without re-engineering your core systems," said Barbara Smiley, a technology analyst at Tower Group, a Wellesley, Mass.-based financial services consultancy.

That is what managers at the $35 billion ITT Hartford Life had hoped for as far back as 1987 when they decided to create an enterprise automation plan to help improve customer service — a variable that has since become a key differentiator among insurers.

"Ten years ago, we were ranked 10th to 12th in different life insurance areas. Now we're in the Top 5 of most categories, and I'd like to think part of that success is due to what we've been doing with technology," Annis said.

Projects in motion

EBD has been working on two concurrent technology projects in the past five years — one an $18 million effort code-named GIPR, or Group Information Processing and Reporting, the other a $12 million scheme called SOLAR, or Special Risk On-line Automation and Reporting.

The projects are intended to provide ITT Hartford's 1,500 EBD employees with more efficient back-office operations. GIPR and SOLAR serve as the foundation for EBD's enterprise automation plan, including data warehousing, Annis said.

Picking up the pace

GIPR and SOLAR systems are being developed with Oracle Corp. application development tools such as Oracle Developer 2000. The systems, which are powered by Digital Equipment Corp. VAX and Alpha servers, are intended to enable the division's claims agents and other staffers to conduct lightning-quick data analyses for their customers.

"In the old world, we would have to log on to a different system each time we wanted to kick off a simple query," said Jeffrey Smith, a senior business consultant at EBD's financial division. The process generally took 15 minutes to generate an answer for a customer, he said.

So far, these systems have been a success for ITT Hartford. For instance, in 1993, EBD migrated its Information Builders, Inc. Focus reporting applications from an IBM VM mainframe environment to a Digital Alpha platform. This application, the first GIPR/SOLAR application that was transferred, allowed Smith and his peers to get answers to customer questions in less than two minutes, he said.

EBD's migration to the Alpha/Focus environment also helped it to pare its mainframe runtime costs by $500,000 after its first year. The IBI Focus migration cost EBD less than $200,000 in hardware, software and staff allocations over a 9-month period, Annis said.

ITT HARTFORD

ITT Hartford's David H. Annis *says the move to frame relay should ease bandwidth demands on the corporate network*

Leader of the pack

ITT Hartford's Employee Benefits Division ranked first in sales of new short-term disability policies among U.S. insurance companies last year, according to *Employee Benefit Plan Review*, a monthly benefits magazine published by Charles D. Spencer & Associates, Inc. in Chicago. With $89.4 million in short-term disability policy sales last year, ITT Hartford's EBD unit had more than double the sales of Unum Corp., its nearest competitor.

AT&T
AT&T
AT&T
AT&T

Got an OODB problem?

Fixing OODB problems is easy when you've got the right tools.

ODE
Save time and increase productivity with ODE. Its single integrated data model alleviates common object database and language problems. O++, a C++-based programming language, enhances the flexibility and adaptability of ODE's operating features. All to make data manipulation easier. And ODE gives you both multiple- and single-user application support without a separate server.

To get your copy of ODE, call
1 800 462-8146 Dept. T13D.

Solve it with ODE.

SOFTWARE SOLUTIONS GROUP
Innovation you can depend on.

AT&T

New Products

BMC Software, Inc. has announced Data Accelerator for IBM's MVS systems.

According to the Houston company, Data Accelerator improves I/O efficiency and reduces elapsed time between batch jobs.

It enhances performance in bipolar and parallel processing environments for MVS by using advanced, intelligent techniques to reduce the number of disk accesses.

Data Accelerator also uses fuzzy logic to learn an application's data access patterns for dynamic performance tuning. It doesn't require job control language or program changes. Data Accelerator offers an optional data compression component to reduce physical storage requirements.

Pricing for Data Accelerator starts at $19,600.

▶ *BMC Software*
(713) 918-8800

Platinum Technology, Inc. has unveiled Performance Estimator, a performance engineering tool.

According to the Oakbrook Terrace, Ill., company, Performance Estimator is a Windows-based performance engineering tool that analyzes IBM DB2 MVS software applications while they are in the design phase. It gives database administrators access to existing information from database catalogs and other tools. It lets them analyze and identify performance problems before the problems are incorporated into final application designs.

Performance Estimator features a library of software and hardware metrics, sample mainframe hardware configurations and example models.

Pricing for Performance Estimator starts at $5,000 per single-user license.

▶ *Platinum Technology*
(708) 620-5000

Product short

Candle Corp. has introduced Omegamon II for SMS, a product for storage monitoring and management for MVS-based storage resources. It features on-line historical and trending analysis and on-line cross-system reporting of shared direct-access storage device performance and usage. Tiered pricing starts at $35,000. Candle, Santa Monica, Calif. (310) 829-5800.

"WHAT'S HOT TODAY CAN BE ANCIENT HISTORY TOMORROW. WE HAVE TO RESPOND INSTANTLY TO CUSTOMER DEMAND OR MISS THE OPPORTUNITY."

Mary Evans, Vice President, Store Operations,
Babbage's Software Stores, NeoStar Retail Group

MARY: "In this business, change is constant. Evolving customer preferences, new software releases, changing product inventories... staying on top of it all and keeping customers informed requires immediate access to the latest information. Our information system keeps it all at our fingertips."

PATRICK: "With Btrieve, we've built a client/server system that's more than flexible. From inventory control to store management and POS systems, Btrieve delivers rock-solid performance, it's virtually maintenance-free, and it's incredibly easy to use."

BUILT ON BTRIEVE

MARY: "The system is so intuitive, our store staff requires very little training. We don't even need the manual. This means our staff can concentrate on serving the customer rather than serving the system."

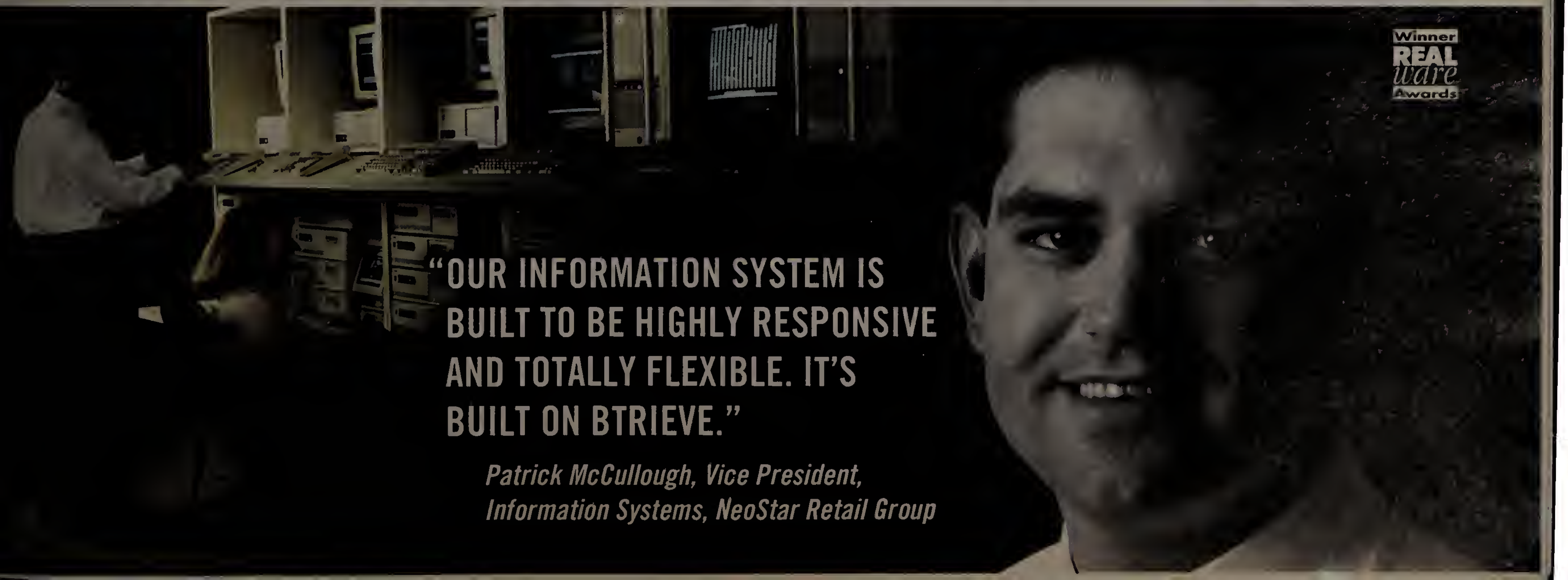
PATRICK: "As Babbage's grew to over 330 stores, Btrieve grew with us seamlessly. We see no limit for our company's future. And we see no limit for Btrieve."

For the complete Babbage's story, call Btrieve Technologies, winner of the 1995 RealWare Award at DB/Expo.

800-BTRIEVE
(512) 794-1719
CompuServe
[GO BTRIEVE]

IT SIMPLY WORKS

BTRIEVE TECHNOLOGIES

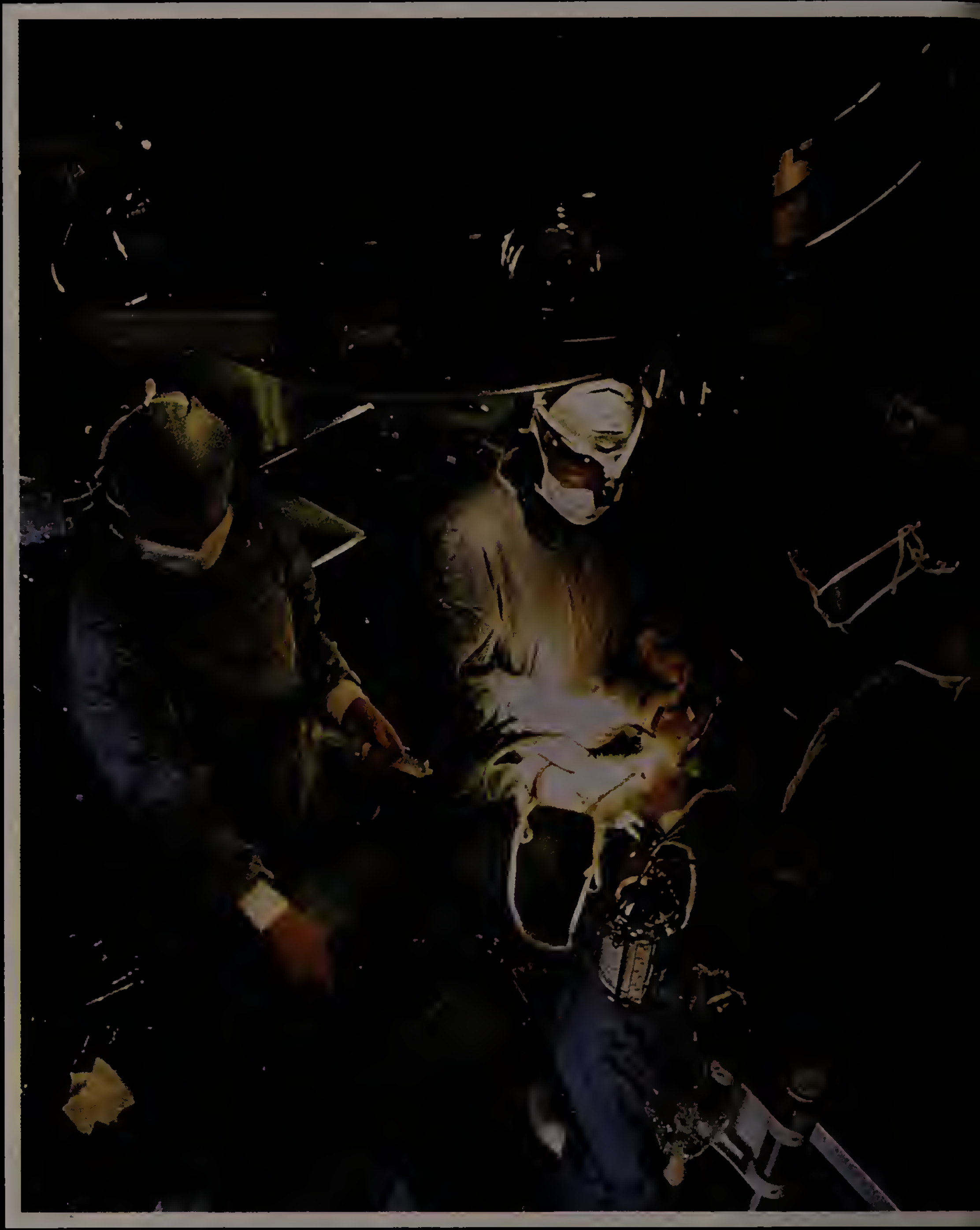


"OUR INFORMATION SYSTEM IS BUILT TO BE HIGHLY RESPONSIVE AND TOTALLY FLEXIBLE. IT'S BUILT ON BTRIEVE."

Patrick McCullough, Vice President,
Information Systems, NeoStar Retail Group

"EDA/SQL MIDDLEWARE MEANS BETTER REPORTING FOR OUR STAFF AND BETTER HEALTHCARE FOR OUR PATIENTS."

James Wells, VP and CIO
Magee-Womens Hospital
Pittsburgh, PA



With Informix databases for radiology systems, Gupta databases for labor and delivery systems, C++ databases for laboratory systems, VSAM databases for financial applications, and Shared Medical Systems proprietary databases for hospital information, Magee-Womens Hospital in Pittsburgh boasts one of the most complex information environments anywhere. How does the hospital combine and report from data located in so many heterogeneous file structures and operating systems without hiring a boatload of expensive programmers and application specialists? The answer...EDA/SQL middleware from Information Builders.

INVESTING IN THE RESOURCES THAT COUNT!

With EDA/SQL middleware, the hospital's doctors, nurses, technicians, accountants, administrators, and marketers can all use today's most popular front-end applications and reporting tools for transparent access to the information they need, no matter how it's structured or where it resides. So instead of investing in more programming resources, it can invest in superior patient-care and research to better serve the community. Perhaps this is why Magee-Womens Hospital was cited as one of the top 10 hospitals in the nation.

SEND FOR A FREE VIDEO!

EDA/SQL...the process is transparent, the benefits are obvious. For more information and a free video on how Magee-Womens Hospital and other companies have realized outstanding benefits from EDA/SQL middleware, contact your local Information Builders sales office or call **1-800-969-INFO.**
In Canada Call 416-364-2760

EDA/SQL®
Transparent Enterprise Data Access

Information Builders

EDA/SQL is the trademark of Information Builders, Inc., 1250 Broadway, NY, NY 10001.

CORBA gets on the map, 64
New products, 65

Sun brews Hot Java to cool net management ills

By Steve Moore

Enterprisewide network and systems management problems will melt away during leisurely cruises on the World Wide Web if new technologies from Sun Microsystems, Inc. and other vendors live up to their promise.

Users applauded cutting administrative costs through Web-based management of remote computers, applications and network devices, but they also pointed to security concerns.

Virgil Pittman at Fireman's Fund Insurance *is concerned about Hot Java's security*

Potential percolating

When first announced, Sun's Java and Hot Java technologies (see box below) were confined to "one small corner of the Web that didn't look to have that much of a future," said Percy Young, manager of store systems and Webmaster at Burlington Coat Factory Warehouse Corp. in Lebanon, N.H.

Since then, Netscape Communications Corp. in Mountain View, Calif., has moved to incorporate Java into future releases of its widely used Netscape browser. Given the prerequisite of security, that makes Java "a more attractive possibility" for pushing some network and systems management functionality out to help desks or less knowledgeable users at remote sites, Young said.

But another user said Hot Java's ability to distribute and make use of applets — small, special-purpose application programs — could compromise security. "Conceptually, it sounds good, but if it's your code, you don't want anyone else getting it," said Virgil Pittman, senior vice president of systems at Fireman's Fund Insurance Co. in Novato, Calif.

Hot Java's usefulness "would be limited to simple functions unless we had an elaborate scheme for using it and had an extreme amount of intelligence built into it," Pittman said.

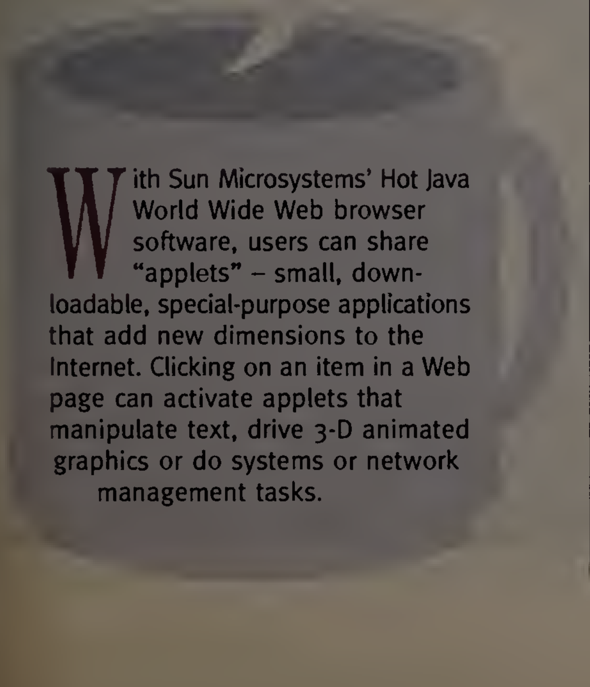
While Sun, so far, hasn't emphasized the use of Java or Hot Java for network or systems management, "using a Web-based interface to devices makes perfect sense," said Eric Schmidt, Sun's chief technology officer.

Different sides

Analysts differed in their assessment of Hot Java's network and systems management benefits. Because Web-based management entails "another interface and another protocol, initially it will be more applicable to managing Web servers than to general-purpose network and systems management," said John Morency, a principal consultant at The Registry, Inc. in Newton, Mass.

Hewlett-Packard Co. in Cupertino, Calif., is prototyping a method for using its OpenView Operations Center to manage Web servers, but a spokesman declined to provide details.

Still, "the Web is, in a way, a form of groupware, and many aspects of network and systems management need groupware functionality," said Jim Herman, a vice president at Northeast Consulting Resources, Inc. in Boston.



With Sun Microsystems' Hot Java World Wide Web browser software, users can share "applets" – small, downloadable, special-purpose applications that add new dimensions to the Internet. Clicking on an item in a Web page can activate applets that manipulate text, drive 3-D animated graphics or do systems or network management tasks.

Du Pont picks Andersen to overhaul applications

Three-year deal aims to up productivity 25%

By Elizabeth Heichler

Faced with a static budget and rising demand for application development services, Du Pont Co. is teaming up with Andersen Consulting to provide a 25% improvement in the maintenance, development and implementation of strategic applications.

The three-year deal, dubbed the Global Applications Alliance, calls for Andersen to bring both tools and consulting services into the Wilmington, Del., chemicals giant. Specific objectives include retraining up to 1,400 information systems personnel and re-engineering internal IS processes, according to Du Pont's Tom Carpenito, manager of the alliance.

Du Pont's Tom Carpenito says *the alliance was driven by a need to improve productivity*

Du Pont is seeking measurable annual quality improvements, and, through the productivity improvements, a 100% net annual return on the entire investment.

"The major business reason driving the alliance is our continuous need for productivity improvements," Carpenito said. "We need this so we can redeploy resources off of existing applications and into new areas and new projects."

Key areas Du Pont needs to target more effectively, according to Carpenito, include business requirements planning and electronic commerce — particularly improving IS connections to customers and suppliers.

Du Pont, *page 65*

Low-end workflow market rises

By Tim Ouellette

Workflow packages are finally coming out for the "regular" business user.

Vendors that have traditionally targeted high-end, production workflow applications are beginning to go after low-volume, high-complexity work processes found among knowledge workers. In the past month, FileNet Corp., Wang Laboratories, Inc. and Recognition International, Inc. have made moves to add less expensive product offerings to their wares.

Production workflow and imaging systems manage high-volume processes, such as insurance claims, by routing work forms and associated paper through an organization. But other business users have lower-volume business processes that are more complex, and they don't want to pay the high cost for access to the production systems.

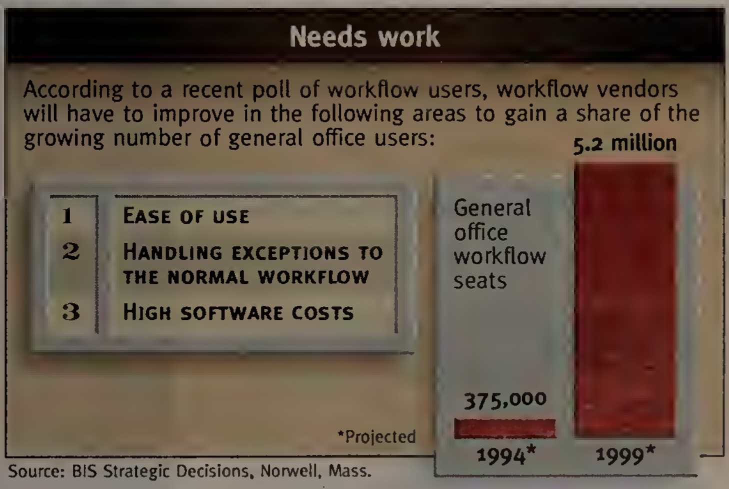
New on the scene

The most recent entrant into the market is Recognition International's Plexus FloWare 3.0 workflow software. It sports an improved graphical workflow designer and work item routing for regular business users.

"Now with a small department, you can bring [departmental workflow users] up in reasonable cost," said Loretta Goralczyk, imaging manager and a FileNet user at American Presidents Line Ltd., a shipping company in Oakland, Calif. "With more choices, you can cost-justify this stuff now."

To reach this largely untapped base of business users (see chart), FileNet and Wang inked agreements or acquired smaller vendors.

Needs work



According to a recent poll of workflow users, workflow vendors will have to improve in the following areas to gain a share of the growing number of general office users:

1. EASE OF USE
2. HANDLING EXCEPTIONS TO THE NORMAL WORKFLOW
3. HIGH SOFTWARE COSTS

*Projected

Source: BIS Strategic Decisions, Norwell, Mass.

FileNet recently purchased Watermark Software, Inc. to provide a lower-cost offering for casual desktop workflow and imaging users. Wang has an agreement with Microsoft Corp. to provide an image viewer and workflow application programming interfaces as part of future versions of Microsoft's Windows 95 and Windows NT. Wang bought Sigma Imaging Systems, Inc. last week to gain a more affordable back-end NT server.

While high-end systems gather tons of data on the processes and work involved, there is no cost-effective way for management to access this information, analysts said.

"That's why I think FileNet is moving down the food chain. They have already captured a major portion of the high-end market, and to capture this midrange market, some of their tools would be overkill," said Bob Berghell, president of Berghell Associates in Manhattan Beach, Calif.

Putting CORBA 2.0 on the map

Object request broker standard to get third-party support at Object World

By Elizabeth Heichler

Application developers taking an object-oriented approach to distributed computing will have a wealth of new products to check out at this week's Object World in San Francisco.

One of the biggest categories is expected to be new versions of object request broker technology that conform to the Object Management Group's Common Object Request Broker Architecture (CORBA) 2.0 standard.

Analysts said support for the second release of CORBA is significant because it adds mappings to commonly used object-oriented programming languages such as C++ and Smalltalk.

Also very important is the Internet Inter-ORB Protocol (IIOP), the new, mandatory standard protocol for interoperability. Support for IIOP means that different vendors' ORBs — which manage the interactions of objects distributed networkwide — should be able to talk to one another. The IIOP will also let customers mix and match different vendors' products within a distributed network architecture.

ORB offerings

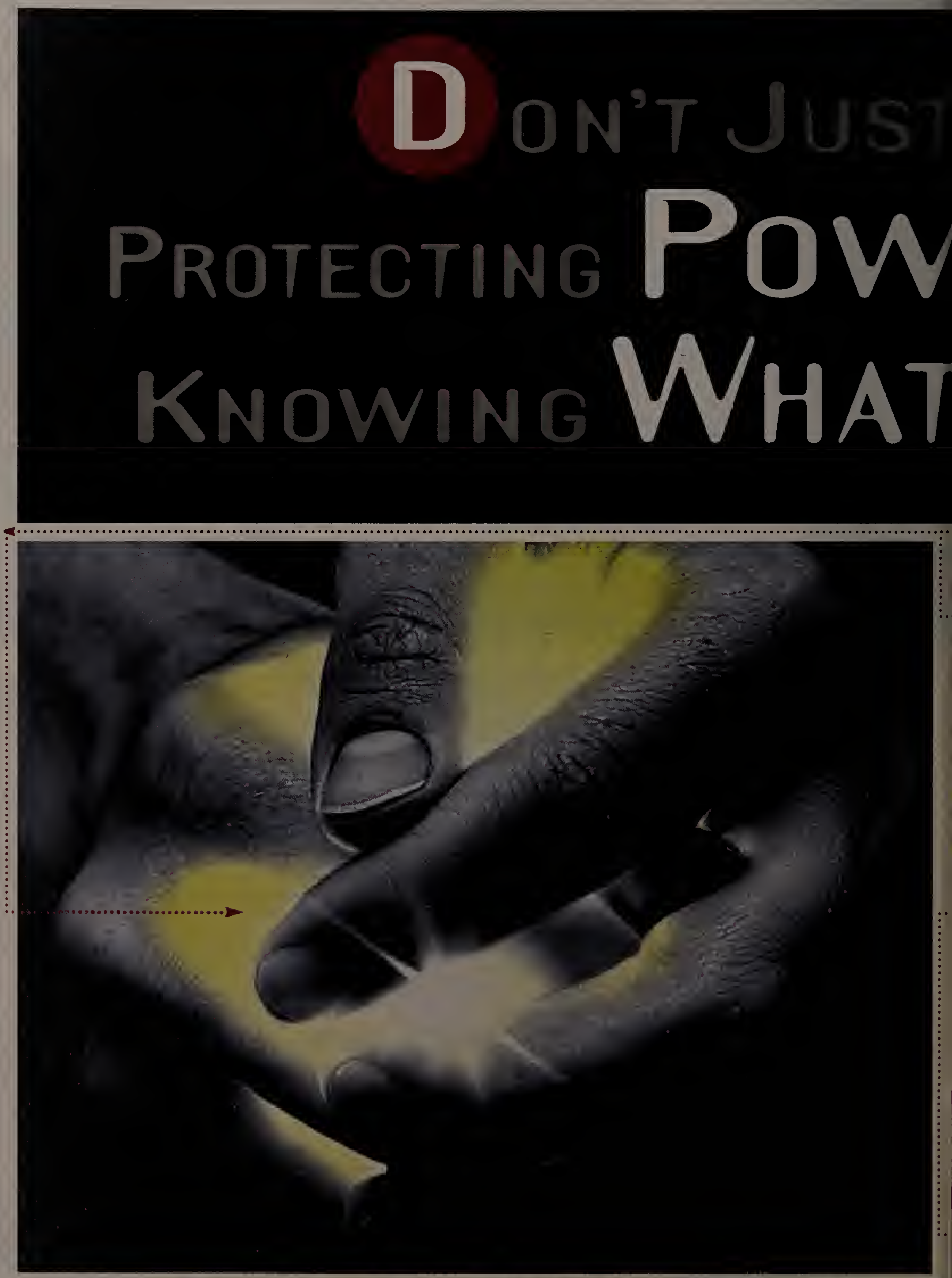
Hewlett-Packard Co. and Postmodern Computing, Inc. last week announced the details of the CORBA 2.0 ORBs, and each will demonstrate the products at Object World. ORB vendors Expersoft Corp. and Iona Technologies Ltd. previously disclosed their plans to deliver CORBA 2.0-compliant products, and Digital Equipment Corp. is slated to unveil its updated offering later this week.

- ORBeline 2.0 from Mountain View, Calif.-based Postmodern Computing may be the first of the CORBA 2.0-compliant ORBs available; the company plans to begin shipping it this week. ORBeline for Unix is priced at $4,999, with runtime fees of $250. ORBeline for PCs is $999, with runtime fees of $150. Postmodern Computing will also announce at the show a deal with Hitachi Ltd. in Japan to develop a next-generation object transaction processing system based on ORBeline.
- HP Distributed Smalltalk 5.0 incorporates a CORBA 2.0 ORB and ParcPlace Systems, Inc.'s VisualWorks development environment. It also includes a transaction service for building high-volume, transaction-oriented applications. The HP environment includes a code generator for the CORBA Interface Definition Language to ease the task of programming. HP Distributed Smalltalk 5.0 is priced at $4,995 for Unix platforms and $2,995 for PC platforms. It is scheduled to ship in October.

Brief

Free information on software reuse via E-mail

The Reuse Information Clearinghouse, a Falls Church, Va.-based service sponsored by the Department of Defense's Software Reuse Initiative, is starting a free weekly news summary service. Subscribers will receive — via electronic mail — summaries of the latest news about software reuse. To subscribe, individuals should send an E-mail message to listproc@sw-eng.falls-church.va.us and include the following in the body of the message: subscribe reuse <name here>.



© 1995 Exide Electronics Group, Inc., 8521 Six Forks Rd., Raleigh, NC 27615. All Rights Reserved Powerware® and PowerCare® are registered trademarks of Exide Electronics Group, Inc. DataFrame™ is a trademark

Du Pont

CONTINUED FROM PAGE 63

The Chicago-based Andersen will introduce its methodology and development tools, Method/1 and Design/1, to Du Pont. Between 20 and 40 Andersen staffers will go on-site to work with Du Pont staffers on project teams.

The alliance between Andersen and Du Pont is unique because it is so collaborative, said Allie Young, a senior analyst in the worldwide services group at Dataquest, Inc. in Westboro, Mass.

Originally, Du Pont had considered simply outsourcing application development, but IS decided it would be better served by hiring a potential outsourcer to come in and increase its capacity internally, Carpenito said. And, the company was wary of ceding management of something so strategic. "We wanted control over our IS resources because they're important to Du Pont," Carpenito explained.

Du Pont's decision not to outsource but to form an alliance to work internally with Andersen is "a new twist on an old thing," said Jeff Cooper, an Andersen partner. "They decided to reinvest in the IS personnel they had and build on their existing strengths. They're going to try to make the same improvements in processes and products that they would have done with outsourcing, but they are doing it with their existing personnel."

Companies are increasingly deciding against outsourcing strategic application development because if they do, their internal IS people never get trained in new software development techniques and aren't able to maintain applications, said Gene Raphaelian, vice president at GartnerGroup, Inc. in Santa Clara, Calif.

Change of pace

In the past, Du Pont hasn't consistently used tools, methodologies and techniques in application development, Cooper said. Carpenito concurred, saying that was one of the reasons working with Andersen was attractive. It has a "more disciplined approach to methodology, tools and management processes than we had," Carpenito said.

Raphaelian warned that as a result, Du Pont's IS organization may have to brace itself. "If they are putting Method/1 in place, then there's going to be culture shock." While it provides "a nice recipe for developing software, maintenance and documentation and improving quality," he added, the discipline required for it to be successful will be a major organizational change.

HINK ABOUT
ER. THINK ABOUT
TO DO WITH IT.

DataFrame™ computer room monitoring lets you manage geographically remote enterprises from a single desktop.

Today, people and companies the world over rely on electronic systems. And it's more important than ever to protect the data that's critical for business. Keeping those systems up and running 100% of the time requires having two kinds of power within easy reach. Electrical and personal. Electrical, to protect against power fluctuations ranging from spikes and surges to total outages. And personal, to control not just the availability of power, but also the consistent quality and knowledgeable management of power.

For that, you need more than merely UPS (Uninterruptible Power Systems) hardware. You need Strategic Power Management℠ from Exide Electronics. A systematic approach that mobilizes technology, service, and software, as well as hardware, to ensure critical-system uptime.

Superior technology. You can take comfort in the fact that nearly every major "first" in power management has our name on it. Including the first power conditioner that uses a "virtual" battery to simulate a battery instead of the stark realities of draining a real one.

We offer Powerware® solutions to ensure uptime for virtually any kind of mission-critical system.

"When we look for the best expertise on our power needs, we talk to Exide Electronics. Overall, they give us superior backup for our power requirements."
Barry Bianculli
Facilities Manager
Conner Peripherals

Worldwide service. Help and consultation are always near from our more than 1,000 factory-trained technicians. (The world's largest dedicated UPS service force, available 24 hours a day, worldwide.)

Comprehensive products. To satisfy any need you might have, we offer the industry's widest range of off-the-shelf and customized solutions for everything from a worldwide network to a desktop PC.

So, what can *you* do with power?

Contact us, and you can do just about anything you want.

Within U.S.A.: (Tel) 1-800-554-3448, ext. 800 or 1-919-872-3020, (Fax) 1-800-75-EXIDE
International: (Tel) +1-919-870-3235, (Fax) +1-919-870-3300, Internet: http://www.exide.com/exide, Email: info@exide.com

EXIDE ELECTRONICS
Strategic Power Management

of DataTrax Systems Corporation, an Exide Electronics Group, Inc. subsidiary. Strategic Power Management℠ is a service mark of Exide Electronics Group, Inc

New Products

Michaels, Ross & Cole Ltd. has introduced Mrc-Productivity Series C/S 6.0, a client/server rapid application development and report writing tool.

According to the Lombard, Ill., company, the product lets users call IBM AS/400 data into Windows-based spreadsheets and other applications. It also lets users add selection criteria and perform calculations over that data from the PC on a runtime basis. These features allow users to integrate AS/400 data with their desktop, without intricate downloading procedures and data structures or Microsoft Corp.'s Visual Basic.

Pricing for Mrc-Productivity Series C/S 6.0 starts at $12,400.

▶ *Michaels, Ross & Cole*
(708) 916-0662

Tower Technology Corp. has released TowerEiffel, a software engineering and development system for Silicon Graphics, Inc. (SGI).

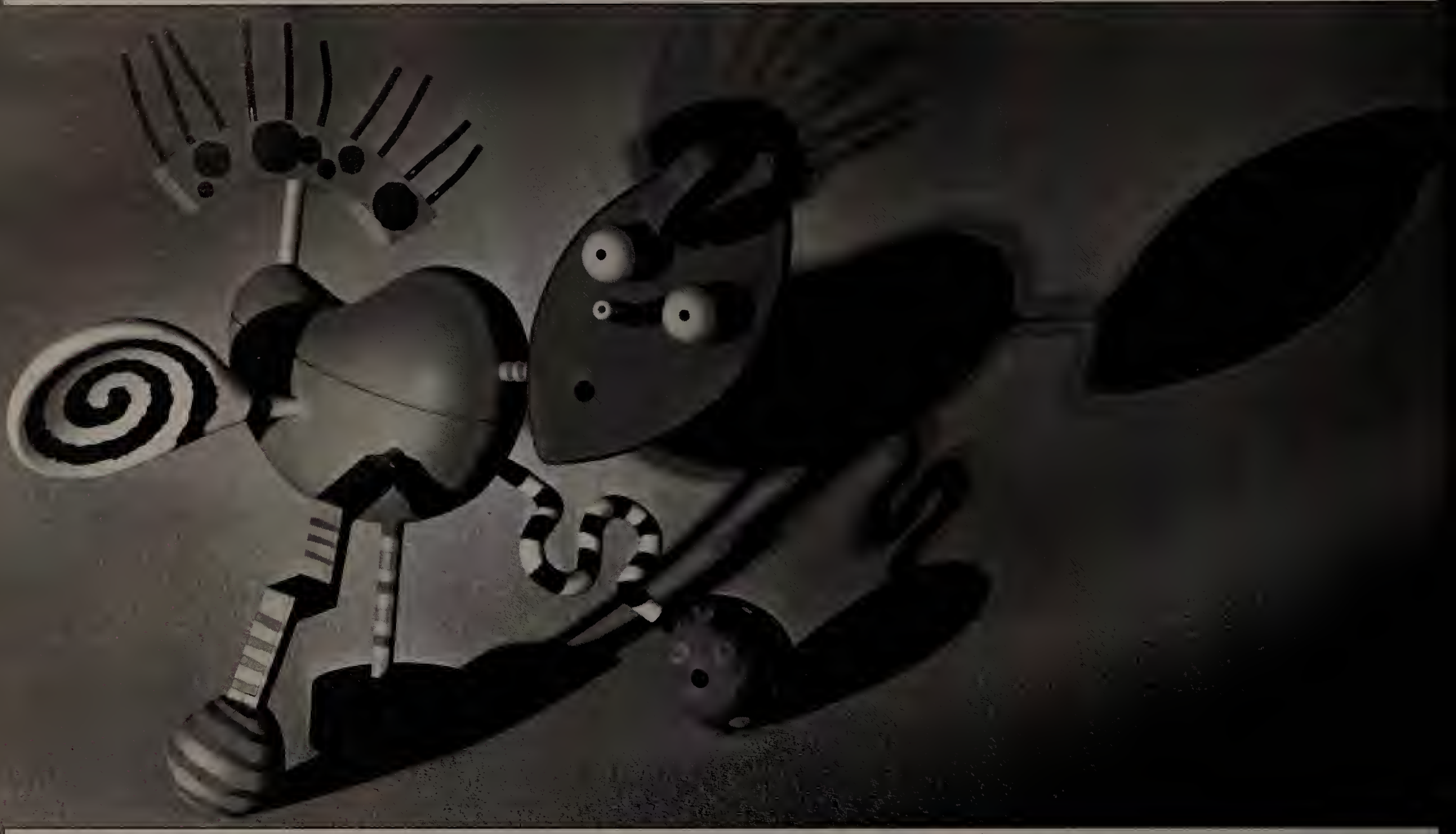
According to the Austin, Texas, company, TowerEiffel is an object-oriented development tool that combines software engineering support with an intuitive syntax and structure. It was designed to let SGI software developers use the advanced features of the Eiffel language on SGI equipment.

TowerEiffel features interoperability among Eiffel, C++ and C. This lets developers use existing C++ libraries and add software engineering support and memory management to C++ programs.

An individual TowerEiffel license costs $249. Commercial developers licenses cost $1,555.

▶ *Tower Technology*
(512) 452-9455

The only limit to our Data Warehouse is your imagination.



Just like this children's toy from Ertl, the data warehouse is infinitely flexible. It not only adapts to your company's changing needs, it helps your company to adapt to changing markets.

Information in an instant.

Accuracy and subsecond speed are two of its most important attributes. You don't need to wait for vital information while someone sifts through a mountain of data.

Irrespective of the platform or the source, the data warehouse extracts, cleans and classifies data from all departments, anywhere in the world, without disturbing data production. It's all about instant access to the right information by the right people.

Instant power.

"Now when we take an order, we can immediately configure the product to our customer's specifications," says Bill Bruttaniti, Ertl's director of IS technology. "With the data warehouse, any authorized individual can now take a snapshot view of forecasts, orders, shipments, production status – or any other information they need – instantly."

Powerful proof.

The results were staggering. Productivity was increased 30% and information accessibility is up 15%, 18 months ahead of schedule. No wonder that together with Ertl, we've won the DB/EXPO '95 RealWare Award for excellence in innovation, efficiency, and measurable results. As a judge said, it's "one of the most exciting solutions being developed in IS today."

Software AG has been providing solutions, services and know-how for over 25 years. Call us and we'll show you how data warehousing can benefit your company.

It won't be child's play exactly, we'll just make it seem that way.

IMAGINE WHAT WE CAN DO FOR YOU **SOFTWARE AG**

For further information call 1-800-843-9534 ext. 166, fax 703-391-6975 or at http://www.sagus.com

INSIDE:
Intelligence Files, page 72
Executive Track, page 73
Calendar, page 74

Taking the high-tech cure

The move toward managed health care has forced painful changes on a once fat and happy industry. But the pharmaceutical giants are using IS to adapt to a radically changed business environment.

By Joseph Maglitta

Berringer Manheim CIO Jim Hopper: Unifying customer data (page 70)

Harold Lee Miller

The 1990s have doubtless given drugmakers a first-hand appreciation of their products for ulcers, hypertension, headaches and depression.

Despite record sales, industry profit margins have shrunk in the past five years from as much as an astounding 80% to roughly 6%. Generic drugs, new regulations, global competition and health care reform outside the U.S. are all ravaging profits.

But the move to managed health care is the most important factor. By 1997, an estimated 85% of U.S. citizens will be part of tightfisted managed care programs, which dispense drugs to members at a fraction of the "golden years" prices of the 1980s.

Other ominous numbers loom: 75% of major drug patents reportedly expire at the end of this year.

To stanch the bleeding, companies from Abbot Laboratories to Wellcome PLC laid off tens of thousands of employees and launched hundreds of re-engineering projects aimed at improving operational efficiency — everything from speeding product development to better integrating suppliers and distributors. Companies have reported resulting savings of hundreds of millions of dollars.

Now, the world's two dozen largest pharmaceutical firms face an even greater challenge: using information technology to launch new marketing strategies and speed up product development.

"Every company in the industry has to rethink every assumption," says Saul

Story line

The pharmaceutical industry's profit margins have plummeted from 80% to 6%. By 1997, 85% of Americans will get their prescriptions from tightfisted managed care plans. These harsh realities have forced Merck, Eli Lilly and other drugmakers to develop IS-enabled marketing strategies and innovative applications that companies in any industry could adopt.

Taking the high-tech cure, *page 69*

CUSTOMERIZE UP CLOSE

Unisys did more than help Signet Bank build a better check clearing process.

We helped them build a better relationship with USF&G Insurance.

USF+G
INSURANCE
EMPLOYEE ID
CHISHOLM, KIRK
NAME
SIGNATURE
1200346
NUMBER
06/93
ISSUE DATE
EMPLOYEE ID
PAYNTER, MARY
NAME
Mary Paynter
SIGNATURE
131036
NUMBER
09/92
ISSUE DATE
SIGNET

When Signet Bank installed the Unisys InfoImage check imaging solution, it didn't take them long to cut costs, boost efficiency and speed the check clearing process. But thanks to our CUSTOMERIZE initiative, Signet got even more.

CUSTOMERIZE is all about helping companies apply information solutions to serve customers better. That's why Unisys consultants and banking experts focused on understanding Signet's business—so we could help them shift their perspective on delivering customer service. The result was a new way for Signet to improve service and even generate a new source of revenue.

Signet approached one of their most valued clients, USF&G—a premier insurance company also dedicated to superior service. When Signet described an idea for image-based check acceptance, USF&G listened.

Signet now delivers check images to USF&G over phone lines the day of receipt. As a result, USF&G improved the efficiency of check acceptance and made the claims process faster.

CUSTOMERIZE is one example of what Unisys means by information management—using information as an asset to make an enterprise more competitive and responsive. For Signet, it resulted in a stronger bond with a key customer. To receive a copy of "Customerize for Growth and Profitability," reach us on the Internet at **http://www.unisys.com/adv** or call **1-800-874-8647, ext. 24.**

UNISYS

©1996 Unisys Corporation

THE INFORMATION MANAGEMENT COMPANY

Taking the high-tech cure

Continued from page 67

Kaplan, head of Andersen Consulting's medical products group in Boston.

Industry watchers predict that the next few years will produce a wave of technology-driven innovation among drugmakers. "There is going to be a lot of experimentation and new models," Kaplan says.

Unfortunately, he adds, pharmaceutical firms "have never been at the head of the class" in using information systems for strategic advantage and growth. "This is going to be a very messy period."

Mark Ozeson, managing consultant at Deloitte & Touche's pharmaceutical industry practice, agrees. "A lot of folks will stumble before they walk," he says.

To reduce missteps and spark innovation in this pinched new landscape, Eli Lilly & Co., Bristol-Myers Squibb and other pharmaceutical giants have recently hired new chief information officers with strong consumer product experience [CW, July 24].

The most interesting — and transplantable — examples of their labor follow on the next two pages.

Obtain new distribution channels

Symptom: Falling profit margins, shrinking customer bases and poor electronic access to drug buyers

Rx: **Purchase the industry's middlemen and absorb their technological capabilities and customers.**

If you can't beat them, buy them. That's the thinking behind the hottest — and most expensive — technology action in the drug industry today.

Big dollars are going toward buying and integrating "pharmacy benefit managers." These so-called PBMs are companies that identify and distribute the most cost-effective drugs for insurance companies, managed care firms and corporate health plans.

In the past two years, drugmakers have scrambled for closer ties with PBMs and the tens of millions of drug buyers they serve. No wonder: Since 1990, this new breed of technology-based firm has grown into a powerful middleman among drug companies, pharmacies, physicians and consumers. By 1997, an estimated 90% of the U.S. population will obtain prescriptions through PBMs.

"When you lose market share, how do you maintain profitability? By buying a new distribution channel," says Jim Doyle, national pharmaceutical practice manager at CSC Consulting in Philadelphia.

Merck & Co. in Rahway, N.J., the world's largest drug firm, started the rush in 1993 with a $6.6 billion acquisition of Medco Containment Services, Inc., a mail-order pharmacy and PBM. A flurry of multibillion-dollar deals by competitors soon followed (see chart).

"The pharmaceutical industry is transforming itself into a new health care industry," says Tom Trainer, CIO at Eli Lilly. "That's one of the main reasons we bought PCS." Indianapolis-based Eli Lilly recently acquired PCS Health Systems, Inc. in Phoenix, the nation's largest PBM.

Trainer notes that PCS will form the basis of the Lilly Health Care Network — a real-time electronic web linking 50,000 pharmacies, 150,000 doctors, insurance companies, testing laboratories and clinics. Other firms have similar designs.

Drugmakers say PBM purchases will improve their ability to advise prescribers and patients. For example, such systems might be used to remind a patient fighting a bacterial infection not to stop taking the drug halfway through the treatment period.

Companies say they'll also enable unprecedented collaboration in developing new drugs and services.

Consultants agree that these megadeals could give drugmakers near-instant, technology-based competitive clout in many key areas. First, PBMs bring vast networks of PCs, databases and networks to new owners. Companies say these ready-to-go connections could enable a wide range of new educational, collaborative and marketing activities.

Second, the new owners gain access to vast databases detailing how their products and competitors' products are used. This data could be invaluable in guiding future marketing efforts.

Third, PBMs provide a solid information and technology base for much-needed diversification into new businesses.

SmithKline Beecham PLC, for example, says its $2.3 billion buyout of Diversified Pharmaceutical Services will help it move "beyond the traditional role of discoverer and developer and manufacturer of pharmacy products to a new role as a manager of health care."

In such a scenario, Lilly — the major producer of insulin — could partner with others to supply diabetics with a wide range of treatment, diagnostics, educational materials and monitoring devices, for example.

But undoubtedly, the biggest prize of all is access to millions of new customers; buying Medco gave Merck access to 20 million customers and potential customers. The PCS database acquired by Lilly contains 54 million names.

It's too early to judge these costly marriages.

"The long-term benefit . . . is only going to be clear five years from now," says Deloitte & Touche's Ozeson. Federal regulations prohibit the new owners and PBMs from fully integrating systems and information.

Nonetheless, big companies are confident that the new technology and information will open lucrative new horizons. They've already accomplished the toughest task: changing from managed care foes to inside partners.

Will big bucks bring big benefits?

Pharmaceutical firms are acquiring drug distributors to obtain new customers, technology and information

DRUG COMPANY	FIRM ACQUIRED	PRICE
Merck	Medco Containment	$6.6 billion
Eli Lilly	PCS Health Systems	$4 billion
SmithKline Beecham	Diversified Pharmaceutical Services	$2.3 billion
Rhone-Poulenc Rorer Bristol-Meyers Squibb	Caremart Alliance	Partnership
Geneva Pharmaceuticals American Stores	RxAmerica Alliance	Partnership

Globalize product testing

Symptom: Varying regulations around the world slow product development

Rx: **Standardize and automate key steps of the approval process on a global basis.**

"In an age when drugs come off patent and lose 50% of their revenue stream in six months, there's an emphasis on getting new products to market quickly," says Deloitte & Touche's Ozeson.

Unfortunately, fewer products have longer — or costlier — journeys to store shelves than pharmaceuticals.

Clinical tests for new drugs often run three to four years and cost $350 million or more, notes Larry Rothman, head of Ernst & Young's pharmaceutical practice. Besides a rigorous Food and Drug Administration process, the new European Union further slows approval.

Ciba-Geigy Ltd.'s Pharma Divi-

High-tech cure, *page 70*

Taking the high-tech cure

Continued from page 69

sion in Summit, N.J., hopes to speed clinical trials and slash time to market by standardizing on a client/server-based global data collection system.

Until now, data was gathered on self-designed forms, then manually entered into a stand-alone PC, explains Thierry Barsalou, international project leader for medical data systems. Data was eventually uploaded to an IBM 3090 in Summit or Basel, Switzerland.

However, the spread of Ciba's business makes global trials a necessity, Barsalou says. So the firm has begun building a distributed, worldwide system of 150 to 180 IBM RS/6000-based workstations running AIX and Oracle Corp. Oracle7 databases. When finished in late 1996, the new system will permit simpler, faster, more uniform management of clinical data at six sites in Europe and North America, the company says.

The reason, Barsalou explains, is that data managers, physicians and others will use standard reports, data entry, screens and data definitions supplied by BBN Software's Clintrial software.

"We need to standardize and speak a common language," Barsalou says. "Otherwise, it is hopeless."

Similarly, Astra Merck, Inc. in Chesterbrook, Pa., has begun efforts to improve the speed and quality of its own clinical trial process. CIO Robert M. Cohen says the industry's newest firm is testing pen-based computing to reduce data entry errors in clinical trials. The new approach eliminates "data cleaning" at a central site, Cohen says. "This way, they get it right the first time."

IS-enabled consumer education

Symptom: Medical information is burdensome for providers to distribute and rarely read by consumers

Rx: Provide customers and consumers with custom-printed and Internet-based educational materials.

Medical information is a potent form of marketing for drugmakers. The trick is getting busy doctors, patients and others to ask for — and read — materials.

Two new approaches show clever ways to use medical information as a way to build buyer relationships with an eye toward future sales.

Roxane Laboratories, Inc. found that mailing out literature on pain medication to callers of an 800 number wasn't especially productive. So in May, the Columbus, Ohio, maker of analgesics and other pain medication launched The Roxane Pain Institute, a World Wide Web page for chronic pain sufferers and health care professionals.

The page (http://www.Roxane.com) lets visitors access newsletters, clinical articles, presentation slides and seminar listings. A separate section offers detailed information on Roxane products.

> "The pharmaceutical industry is transforming itself into a new health care industry."
> Tom Trainer,
> CIO, Eli Lilly & Co.

"More and more people are taking an active role in the management of their disease," explains Tom Via, manager of Roxane marketing plans. "AIDS is a perfect example."

Since it went on-line in mid-May, Roxane's home page has had roughly 60,000 hits, Via says.

In contrast, Astra Merck focuses on providing custom, desktop-published printed materials that managed care organizations and other Astra Merck customers can give out to their patients or physicians.

The company can supply customers with tailor-made booklets printed with their names on the front, for example.

"We believe if we build relationships with customers, they will be more inclined to give us an opportunity to talk about the product," CIO Cohen says.

Top priorities for tough times

Top issues for pharmaceutical IS

1. Aligning IS and corporate goals
2. Instituting cross-functional information systems
3. Implementing business re-engineering plan
4. Organizing and using data
5. Connecting to customers/suppliers

Top technologies

1. Client/server
2. Groupware
3. Document and workflow management

Source: CSC Index study of North American pharmaceutical firms

Unify customer information

Symptom: Unintegrated customer databases make cross-divisional sales difficult

Rx: Build combined corporate database supported by worldwide electronic mail.

Berringer Manheim Corp., a $3.5 billion Indianapolis maker of monitoring equipment, orthopedic supplies and pharmaceuticals, got tired of seeing fractured views of customers — and itself.

Hospital chains and health maintenance organizations "are demanding that they do business with integrated suppliers," explains CIO Jim Hopper. "They want more one-stop stopping and are demanding better prices and services."

Unfortunately, the company's three major divisions couldn't easily share crucial customer information. So this month, the firm began building a production version of a customer database using a Powersoft Corp. PowerBuilder front end and a Sybase, Inc. database.

Hopper says the client/server "data mart" will cleanse information from three separate corporate processing systems. A single customer view helps the sales and marketing divisions plan more effectively, he says.

"For example, we can present a case to the Henry Ford Medical Center about how they are using our products now and how they can look at us as an across-the-board supplier," Hopper explains.

To improve global integration, the privately held company is also introducing SAP America, Inc.'s R/3 worldwide and installing Lotus Development Corp.'s CC:Mail for 9,000 employees at 26 companies in 10 countries.

The firm's Gaithersburg, Md.-based drug division now sells mostly in Europe, Hopper says. But better-integrated systems will greatly aid a planned expansion into the U.S. and enable outside partnerships, for example, between its unit manufacturing diabetic monitors unit and insulin-maker Eli Lilly.

In essence, drugmakers are emulating what many banks have done for several years: create a single customer view with an eye toward creating packaged deals.

Hopefuls might do well to study Astra Merck. In June, the company rolled out a proprietary customer information system called Compass. An Oracle database used by sales representatives, developers and headquarters staff includes not just names and addresses of customers but the customer's hospital affiliations and the doctors affiliated with those hospitals. Compass also contains information on the customer's needs, values and preferred products as well as records of Astra Merck contacts with the person or organization, CIO Cohen says.

The goal, he explains, is to ensure that "the left hand knows what the right hand is doing" internally. That kind of intracompany coordination is especially important in managed care, where members of interdepartmental teams, not just individual sales representatives, typically call on customers, Cohen says. ■

Maglitta is *Computerworld*'s senior editor, corporate strategies.

VISUAL BASIC
WINDOWS NT SERVER
GUPTA
SQLWINDOWS
For Microsoft SQL SERVER
SQLBase Desktop
SQLNetwork

With a team like this, it's easy to see how applications scale up to the enterprise.

Our team is on your side.

The news is out. Microsoft® and Gupta® have teamed up to deliver all the power you need to build large-scale client/server applications. And do it quicker than ever before.

Using powerful component-based tools, Gupta now offers Microsoft developers the first painless way to scale up to the enterprise. And the best news of all? You can see it for yourself at a Microsoft/Gupta seminar coming to your neighborhood.

All the power you need.

Come to this important seminar to witness firsthand how Microsoft and Gupta together have optimized SQLWindows® and SQL Server 6® to enable developers to build large, robust applications that include optimized connectivity, a powerful repository, OLE2 components and even Microsoft Mail.

Components for all developers.

Then learn about the new products coming this fall. Like Gupta's SQLBase® Desktop which includes Visual Basic® components for easy SQL access. Or Gupta's three-tier SQLNetwork connectivity from Visual Basic to IBM® DB2 and mainframe legacy data. Now, Visual Basic users benefit from the deployment products that over 100,000 SQLWindows developers have relied on for a decade.

Come, see for yourself.

Don't miss this unique opportunity to hear more from the Microsoft/Gupta team, see live demos of the products and even meet Umang Gupta, the founder of Gupta Corporation. Also, meet several Gupta partners who offer complementary solutions.

Join the team that scales the enterprise. Just call **1-800-44-GUPTA Ext. 402** to register for the seminar nearest you. But hurry. A limited number of seats are available.

MICROSOFT and GUPTA

Co-sponsored Seminars

Seattle	9/19
Los Angeles	9/20
Atlanta	9/21
Houston	9/26
Chicago	9/27
New York	9/28

GUPTA™

THE POWER TO GET
CLIENT/SERVER DONE

Gupta on Internet http://www.gupta.com

©1995 Gupta Corporation • 1060 Marsh Road Menlo Park, CA 94025 • 415/321-9500 • Fax 415/321-5471 • Quest, SQLBase, SQLGateway SQLRouter, SQLHost and SQLTalk are registered trademarks of Gupta Corporation SQL/API SQLNetwork, SQLConsole, QuickObjects, Fast Facts, Gupta and the Gupta Powered logo are trademarks of Gupta Corporation SQLWindows is a registered trademark and TeamWindows, ReportWindows and EditWindows are trademarks exclusively used and licensed by Gupta Corporation Windows is a registered trademark of Microsoft Corporation Other trademarks are the property of their respective owners

Intelligence Files

Marketeers not sold on Web server role

They love to pitch doing business on the Internet, but marketing executives are letting IS buy Web site equipment

Despite widespread interest in marketing on the Internet, rarely do marketing executives get involved in purchasing decisions regarding the World Wide Web servers at their companies. They almost always leave that job to information systems.

According to a recent study by Business Research Group in Newton, Mass., of 169 decision-makers at medium-size and large companies, the decision about Web servers is typically made by a senior IS manager, the chief information officer, director of MIS, vice president of IS or any one of several IS or networking specialists. There is almost never a case where the vice president of marketing is calling the shots.

As a result, IS budgets are typically absorbing the cost of all Internet implementations. But Business Research Group predicts that picture will change in the next few years as customer service, marketing and sales activities on the Internet grow and electronic commerce becomes a secure medium.

CALLING THE SERVER SHOTS

Who makes decisions on Web server purchases at your company?

Position	No. of responses
Senior IS	63
Network manager	21
Corporate management	20
Chief information officer	16
Other IS professionals	4
Group decision	2
Other	5

KEY APPLICATIONS DRIVING INTERNET USE

External and internal marketing tools are high priorities

Tool	No. of responses
E-mail	45
Research	27
Customer service	15
Marketing/sales	11
Public services	5
Data access	5
Corporate visibility	4

Source: Survey of 169 Internet server decision-makers by Business Research Group in Newton, Mass.

One way to bolster employee computer skills is to help staff buy their own computer.

That's the thinking at Sentra Health Systems, a Norfolk, Va.-based integrated health delivery system, which offers full-time employees interest-free, three-year loans to purchase PCs for home use.

The catch: The computers must be compatible with Sentra Health Systems' wide-area network, and they must be loaded with remote access software.

To help employees get acquainted with their new systems, the company's information systems department offers weekend seminars on a variety of topics and provides for an IS staffer to visit every participant's home and help them with questions or problems.

So far, 670 company employees have taken advantage of the program, with a loan value of $2 million.

Acquisition professionals finally have their own association — Caucus.

The Association of High Tech Acquisition Professionals, Caucus, has announced its formation and its first conference.

The association will offer acquisition professionals a forum to discuss problems, opportunities, contracts and procurement strategies. It will also sponsor the Caucus '95 conference in November on issues facing the acquisition industry. Details are still to be announced.

Charter memberships in Caucus are $295; the conference fee is $695. For information, contact Caucus, Winter Park, Fla. (407) 740-7286.

As companies expand and upgrade their computer systems, senior executives worry, "Are they safe and sound?"

Nearly three quarters of senior executives surveyed in a recent study say data security is their top concern as they expand and upgrade systems — a dramatic jump from the previous year.

The survey, "Managing Today's Automated Workplace," is conducted annually by Olsten Forum for Information Management, a division of Olsten Corp. in Melville, N.Y. This year data security leapfrogged from sixth place to first as a chief concern among 400 senior corporate executives. The issue replaces systems integration, which dropped to third place this year.

Other survey findings include the following:

- IS outsourcing has increased in the past year, with 30% of respondents using or considering outsourcing, up from 24%.
- Telecommuting options are now offered by 49% of respondents, up from 42%.

CIOs still feel besieged

Inadequate resources, concerns of IS value for dollar dog execs

Concerns over inadequate staff skills and resources and rapidly changing technologies continue to haunt chief information officers.

Meanwhile, top executives are still hounding CIOs about information systems' value for the dollar and IS alignment with business needs.

Those are among the conclusions of a recent Koeller & Associates survey titled "Information Technology: Top 10 Executive Issues & Top 10 CIO Issues." The Chicago company surveyed 50 CIOs for this year's study, which is an update to last year's "Top 10 Executive Issues" survey.

Closer look

The focus of this year's survey is how CIOs view the top issues in their department and what they view as the top IS issues for their top executives. Participants represent a broad range of industries, company sizes and geographic distribution. More than 20% of this year's CIOs participated in last year's survey.

A ways to go

According to the survey, the concerns of CIOs and their top executives are basically the same as they were a year ago, indicating that improvement is still needed in each area.

"On the average, CIOs stated that they had a long way to go on all 10 issues, but individually, there were examples of great success on each of the issues," says Richard Koeller, president of Koeller & Associates.

The survey concluded that CIOs feel they do not have adequate resources and staff to meet their customers' needs — a problem made worse by rapid changes in technology. As a result, CIOs want more support from their customers and better business input in the planning process.

	TOP 10 IS ISSUES FOR CIOs		TOP 10 IS ISSUES FOR SENIOR GENERAL MANAGERS
①	IS staff skills	①	Value for IS investment
②	Rapidly changing technologies	②	IS/business plan alignment
③	Customer support	③	Re-engineering support
④	IS resources	④	Customer service focus
⑤	Migrating to client/server	⑤	Adequate technologies
⑥	IS strategic plan	⑥	Management control
⑦	Business plan input	⑦	Proper management process
⑧	Project management	⑧	General management of IS resources
⑨	Network management	⑨	Proper organization
⑩	End-user support	⑩	Correct personnel

Source: Koeller & Associates 1995 survey, Chicago

Get the GENICOM Advantage.

Complete and return this postage-paid card for more information about GENICOM's family of long-running printers, supplies and service. For faster response, call **(800) GENICOM Dept. C,** or fax card to (703) 949-1392.

(please print)

Name______________________________

Title______________________________

Company______________________________

Address______________________________

City______________ State__________ Zip__________

Phone(____)______________ Fax(____)______________

1. I'm interested in:
   - ☐ Laser printers ☐ Dual paper path printers
   - ☐ Line printers ☐ All
2. What are your applications? (please check all that apply)
   - ☐ Bar codes ☐ Duplexing ☐ Large format
   - ☐ Multipart forms ☐ Text ☐ Graphics ☐ Other
3. When will you be purchasing printers?
   - ☐ 0-3 months ☐ 4-6 months ☐ 7-9 months
   - ☐ 9+ months ☐ No current plans
4. How many printers do you plan to purchase during the next 12 months?
   - ☐ 1-5 ☐ 6-10 ☐ 11-25 ☐ 26-50 ☐ 50+
5. ☐ Please check this box if you would like to have a GENICOM representative call you.

The GENICOM® Advantage

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

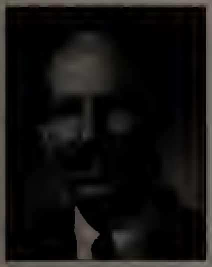
BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 124 WAYNESBORO, VA

POSTAGE WILL BE PAID BY ADDRESSEE

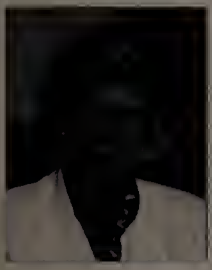
GENICOM
One Genicom Drive
Waynesboro, VA 22980-9942

Executive Track



Standard Register, a business equipment, forms and management company in Dayton, Ohio, has appointed **Thomas Russell** as vice president of electronic products and chief information officer. Russell will oversee forms automation research as well as related product development and customer service. He will also direct the activities of the internal information systems department.

Russell will report to President and Chief Executive Officer Peter Redding. Prior to his appointment, Russell served as a partner and business transformation practice leader at Computer Sciences Corp. His other employers include Ernst & Young, Wang Laboratories, Inc. and Merchants National Bank.



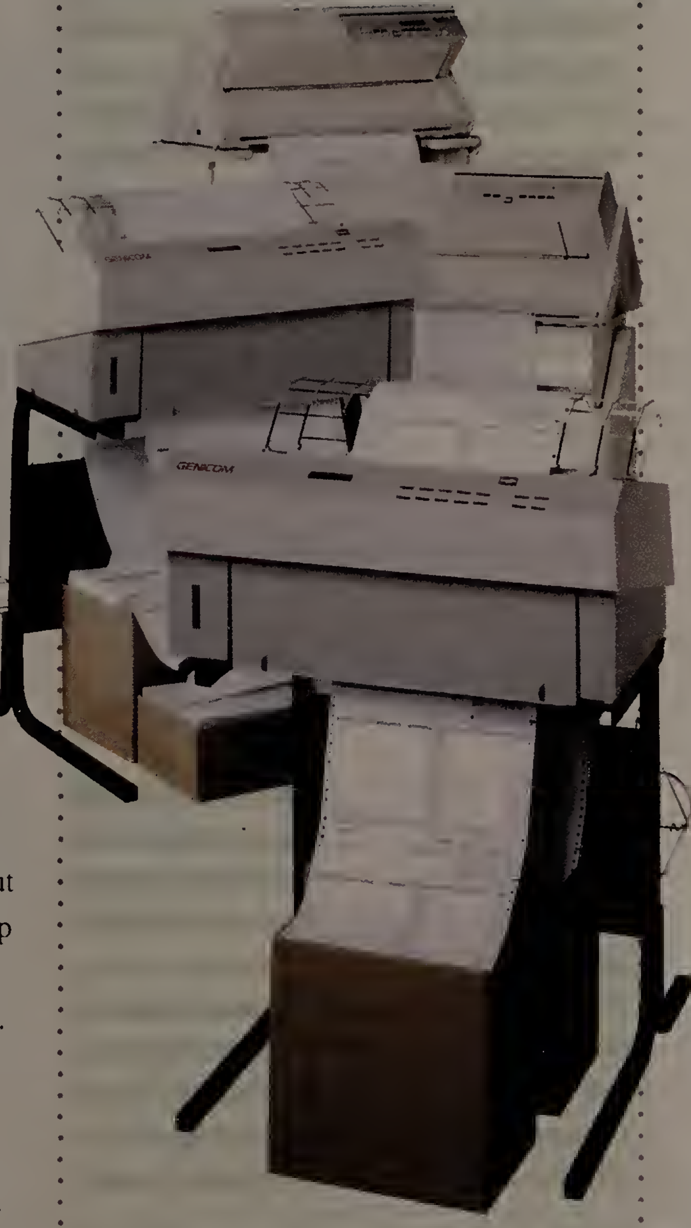
MicroAge, Inc. in Tempe, Ariz., has announced the appointment of **Barbra Cooper** to the newly created position of CIO. Cooper replaces retiring Vice President of Information Resources **Larry Szambelan**, who will continue to serve as a consultant to the company. Cooper will report to Bob O'Malley, president of the MicroAge Data Services division.

The state of Missouri has announced the appointment of **Mike Benzen** to the newly created position of CIO. Benzen will handle statewide strategic planning and coordinate those plans with agency information technology budgets. He will also be responsible for monitoring information systems procurement, selecting and sponsoring new technology research and directing the adoption of statewide IS policy, procedures and standards. Prior to the appointment, Benzen was deputy director of the Office of Information Systems at the Missouri Department of Mental Health.

Roger L. Wisley, manager of electronic data interchange operations at **Navistar International Transportation Corp.**, has been elected chairman of the board of directors for the **Automotive Industry Action Group** (AIAG), a not-for-profit trade association of more than 1,000 North American automobile and truck manufacturers and their suppliers. The group is based in Southfield, Mich.

Diversey Corp., a Livonia, Mich.-based manufacturer of water cleaning and treatment products, has announced the appointment of **Roger Jones** as vice president and CIO. In his new position, Jones will develop and implement an information technology strategy and oversee the completion of a major IS project. Prior to the appointment, Jones was vice president and senior technology officer at Bunge Corp.

The **National Association of State Information Resource Executives** has announced several appointments among its membership. **Mike Hale** has been appointed CIO in Georgia. He was previously executive administrator for Florida's Information Resource Commission. **Fredrick Beosh** has been appointed chief information architect in Kansas. **Clare Donahue** has been appointed acting director of Washington's Department of Information Services. She replaces **George Lindamond**. **John Douglas** has been named acting executive for Florida's Information Resource Commission. **Larry A. Olson** has been named deputy secretary for information technology in Pennsylvania. And **Lynn Wright** has been named deputy CIO in California.



If your business runs on forms, run your forms on a GENICOM.

WE OUTPERFORM ON EVERY FORM. Whether it's the office, warehouse or production line, trust your forms printing to GENICOM. Our family of paper-flexible forms printers gets the job done every time. Choose from models that let you fly through forms up to six parts. Load two forms at once and switch jobs without changing paper. Store and recall up to four user-defined formats. Print crisp, accurate industrial graphics. There are even special models for IBM® client/server systems and IGP/QMS® applications.

FORM-FRIENDLY FEATURES. From the award-winning 3800 Series to our new 3400s, these 400 to 600 cps time-savers have all the features you need for nonstop serial matrix forms applications. Like automatic forms thickness sensing and adjustment. True zero-inch tear-off. Straight-through paper path. Automatic forms advance, paper park, top-of-form and interface switching. It all adds up to hassle-free performance at prices that make good business sense.

energy EPA POLLUTION PREVENTER

MIDRANGE Systems BUYERS CHOICE AWARDS 1995 WINNER 3940IP

WE STAND BY OUR PRINTERS SO YOU WON'T HAVE TO. Each dual- and single-paper path GENICOM forms printer is backed by a one-year warranty and the commitment of our global service network to keep you up and running. For a free copy of **The Complete Guide to GENICOM Printing Solutions**, call **1-800-GENICOM Dept. 236**.

NOBODY OFFERS MORE RELIABLE SOLUTIONS FOR MULTIPART FORMS PRINTING.

CHECK OUT THE NEW PRICE LEADERS, GENICOM'S 3460/3480!

GSA Schedule approved.

© 1995 GENICOM Corporation. All company and/or product names are trademarks and/or registered trademarks of their respective owners. The ENERGY STAR™ emblem does not represent EPA endorsement of any product or service.

The GENICOM Advantage

Calendar

SEPT. 5 - 22

MANAGEMENT

1995 International Customer Service Association Annual Conference. Orlando, Fla., **Sept. 9-13** — Theme: "In Search of New Customer Service Galaxies." Keynote speakers will include Tom Peters, founder of the Tom Peters Group, and Les Brown, author and television personality. Contact: International Customer Service Association, Chicago, Ill. (800) 203-4272.

IS Expo Fall '95. Anaheim, Calif., **Sept. 10-13** — Topics will include the impact of client/server on mainframe operations, distributed systems management using remote support, continuous quality improvement in the data center, the data center's changing role, managing help desk performance and customer expectations and enterprisewide monitoring. Contact: Association for Computer Operations Management, Orange, Calif. (714) 997-7966.

The Knowledge Imperative Symposium: Using Knowledge to Compete. Houston, **Sept. 11-13** — Sponsored by Arthur Andersen and The American Productivity & Quality Center (APQC). Sessions will include "Perspectives on Knowledge Management and Learning," "Doing Battle in the Knowledge Revolution," "The Knowledge Management Model" and "Waking the Sleeping Giant: Tapping Into Your Organization's Knowledge." Fees: $1,300 for nonmembers, $1,200 for APQC/International Benchmarking Clearinghouse members, Arthur Andersen employees and clients and government/nonprofit employees. Contact: APQC Knowledge Imperative Symposium, Houston, Texas (800) 366-9606.

Second Annual Virtual Office Conference: Making the Concept a Reality. Miami, **Sept. 14-15** — Seminars will include "Achieving Competitive Advantage Through the Virtual Office and a Decentralized Workforce," "Organizing an Alternative Workplace Program," "Developing Comprehensive Company Policies for Off-Site and Decentralized Work Programs," "Quantifying and Measuring the Success of Alternative Workplace Programs" and "Examining the Tools that Maximize Connectivity and Responsiveness in a Decentralized Environment." Contact: Institute for International Research, Inc., New York, N.Y. (800) 345-8016.

HRMS/Expo '95: The National Human Resources Information Technology Exposition and Conference. San Jose, Calif., **Sept. 18-20** — Topics include human resources strategies and tactics, client/server applications, payroll and retirement systems, project management and human resources implementation, benefits and compensation, business process re-engineering and financial solutions. Contact: Dave Code, Blenheim NDN, Inc., Mountain View, Calif. (800) 232-3976.

Calendar announcements should be submitted at least six weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and phone number.

SEND ANNOUNCEMENTS TO:

David Weldon, Associate Editor/Management, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701. Fax: (508) 875-8931.

INDUSTRIES

Geographic Technology in Government (GTG) '95: Second Annual Conference, Exposition and Data-Mart. Reston, Va., **Sept. 5-8** — Focus is on geographic technologies, what works and what doesn't from an organizational and technological perspective. Fees: government, university and nonprofit employees, $350; students, $195; all others, $450. Contact: GIS World, Inc., Conference Division, Fort Collins, Colo. (970) 223-4848.

Manufacturing Execution Systems Roundtable 4. Chicago, **Sept. 13-14** — Focus is on improving manufacturing productivity and quality with integrated manufacturing execution systems. Contact: Manufacturing Execution Systems Association, Pittsburgh, Pa. (412) 781-9511.

USER GROUPS

Unix Expo. New York, **Sept. 19-21** — Sponsored by the New York LAN Association. Contact: Laura McQuaid, Blenheim Group, Fort Lee, N.J. (800) 829-3976, ext. 384.

XDB Sixth Annual International User Conference. Baltimore, **Sept. 19-22** — Fee: $675; $795 after Aug. 15. Contact: Connie Handen, XDB Systems, Columbia, Md. (800) 488-4948.

SECURITY

The Information Warfare Conference. Arlington, Va., **Sept. 7-8** — The focus will be on personal privacy, industrial and economic espionage and global information warfare. Contact: Paul Gates, National Computer Security Association, Carlisle, Pa. (717) 258-1816.

Establishing Security and Combating Financial Cybercrimes on the Information Superhighway. Chicago, **Sept. 13-14** — Topics will include security requirements for the Internet, threats to financial security in cyberspace and tools for securing electronic commerce. Contact: Ralph Gaillard Jr., International Communications for Management, Chicago, Ill. (312) 540-3845.

VB '95: Virus Bulletin's 5th Annual International Conference. Boston, **Sept. 20-22** — Topics will include introductory session on computer viruses, problems encountered by corporate security managers and what the technology will look like at the turn of the century. Contact: Virus Bulletin Ltd., Ridgefield, Conn. (203) 431-8720.

TECHNOLOGIES

DiskCon USA '95 Trade Show and Conference. San Jose, Calif., **Sept. 6-7** — Focus is on suppliers of technology, equipment, materials and services to the data storage industry. Contact: International Disk Drive Equipment and Materials Association, San Jose, Calif. (408) 720-9352.

Client/Server Economics Summit. Washington, **Sept. 18-20** — Topics include the following: distributed systems support, real-world advantages of deploying a request-tracking system, applying advanced systems and profiting from emerging technology, controlling the cost of migrating to a client/server environment, networking challenges of client/server and deploying mission-critical systems in a client/server environment. Fees for the conference are: $1,095 until Aug. 18; $1,195 after Aug. 18. Contact: Mary Clare Bennett, Client/Server Economics Summit Registration, San Francisco, Calif. (415) 905-2267.

Online Developers II. San Francisco, **Sept. 19-21** — Sessions will include the following: "How to Position Your Content in the Post-Web World," "Strategies for Cross-Marketing Your Online Product," "How to Negotiate the Best Deal for Your Content" and "Product Design and Development from the Experts." Contact: Jupiter Communications, New York, N.Y. (212) 941-9252.

NAIL
THIS FREE OPPORTUNITY TO SEE
COGNOS TOOLS IN ACTION!

Come to the Cognos National Seminar Series and see how easily managers and executives can improve corporate decision-making across an entire enterprise.

Seminar locations and dates

Atlanta	9/27	New York City	9/28
Austin	10/4	Oklahoma City	9/27
Baltimore	10/24	Orlando	9/14
Boston	10/5	Parsippany	10/4
Chicago	9/20	Philadelphia	10/3
Cleveland	10/12	Phoenix	10/3
Dallas	9/12	Pittsburgh	10/10
Denver	9/26	Portland, OR	10/4
Detroit	9/19	Raleigh	10/26
Hartford	9/26	Richmond, VA	10/25
Houston	9/20	Salt Lake City	10/4
Indianapolis	10/11	San Diego	10/3
Los Angeles	9/13	San Francisco	9/14
Miami	9/13	Seattle	10/5
Minn./St. Paul	10/5	St. Louis	10/10
New Orleans	9/12	Washington, D.C.	10/17

Register for the Cognos National Seminar Series today!

1-800-685-3436, ext. 139

Call toll free to register by phone. Or E-mail us at cognos@mvi.com.

COGNOS®
TOOLS THAT BUILD BUSINESS™

Impromptu
The Corporate Standard for Database Reporting

ENTERPRISE-WIDE DATABASE REPORTING.

NAILED.

COGNOS
Impromptu

Introducing Impromptu 3.0. Need to put the best database reporting in the industry on every desk in your enterprise? Consider it done.

Impromptu® 3.0 defines a new era in end-user reporting. We've changed the rules. And developed a tool that takes unprecedented, "self-service" database query and reporting to *all* your users. Whether you have 1,000. Or just one.

Give business intelligence to all your users. Everyone wins with Impromptu. A true object-oriented architecture and inheritance-based administration make deployment fast and management simple. You control the balance between client and server processing, so it's easy on your network.

Users love the intuitive Windows™ interface, along with complete OLE integration and dozens of ReportWise™ templates for creating instant ad hoc reports – all without knowing a word of SQL. And every copy includes native support for 20 popular server and PC databases as well as ODBC.

Call for a free Visual Tour and big savings. Call 1-800-426-4667, ext. 2070 today. We'll rush you our free Visual Tour that shows you how Impromptu 3.0 can impact your organization in days, with maximum user acceptance. Plus we'll tell you about special pricing on multiple-copy purchases.

Call now. And see Impromptu – the only database reporting tool that delivers business intelligence to everyone in the enterprise. End of story.

Impromptu
A Visual Tour

IMPROMPTU 3.0 VISUAL TOUR.

1-800-426-4667, ext. 2070

COGNOS

TOOLS THAT BUILD BUSINESS℠

© 1995, Cognos Incorporated. Cognos, Tools That Build Business, Impromptu and ReportWise are trademarks of Cognos Corporation

FOR THOSE WHO CAN'T SEEM TO GET NETWORKING OFF THEIR MIND.

Consumed by the need to network? Then you really should attend NetWorld℠+Interop® this fall in Atlanta. You'll meet with over 500 of the industry's top LAN, WAN and telecommunications suppliers. You'll explore the world's most diverse, fully deployed event network, the InteropNet™, as it runs the latest in high-speed networking, client-server, Internet access and more. Best of all, you'll test drive new solutions vital to your business and see how well they *really* work. NetWorld+Interop is, by far, the fastest, easiest way to check out all the hottest networking technologies. Not to mention the perfect place to improve how your business communicates. So don't wait another minute. Make your reservation for Atlanta right away.

NETWORLD™+INTEROP® 95

FREE VIP PASS • ATLANTA, GA • SEPTEMBER 27-29 • GEORGIA WORLD CONGRESS CENTER

Name________________________________ Company________________________________

Address________________________________ City, State, Zip________________________________

Phone/Fax________________________________ Fax: 415-525-0199 • Mail: N+I 95, P.O. Box 5855, San Mateo, CA 94402-0856

GET CONFERENCE INFORMATION VIA THE WEB AT http://www.sbexpos.com • QUESTIONS? CALL 800-488-2883

A190

The conference program runs September 25-29. Outside the U.S. call 415-578-6900. © 1995 SOFTBANK Exposition and Conference Company (SOFTBANK Expos). Interop is a registered trademark of SOFTBANK Expos. NetWorld is a service mark of Novell Inc. All other names are the property of their respective holders.

Desktop DBMS WILDFIRE!

(13,212,887)
9
1

**IS pros love 'em. Users love 'em.
But will these databases burst into flame under pressure?**

BY AVERY JENKINS

They've come a long way from the original dBase blank screen and dot commands. The new breed of Windows-based desktop databases are user-friendly, flexible and far more capable than Ashton-Tate Corp.'s original product that chugged along on a vintage 8088.

But despite their ease of use — or, more likely, because of it — some desktop databases can be a disaster waiting to happen. The irony is that information systems departments are handing these packages to eager users in the hope of saving time in the short run.

"Windows databases, in many cases, changed the way databases worked, for better and for worse," says Jeffrey Angus, principal at The Data Works Ltd., a consulting firm in Seattle.

"Rather than going to the data center" to get databases built, Angus says, "you do it at the desktop level."

And that can cause problems.

The common scenario goes something like this: Empowered by a desktop database management system such as Microsoft Corp.'s Access or Lotus Development Corp.'s Approach, an end user puts together a database to make a chore less onerous.

Word gets around, and soon, a few more end users are employing the database and adding their own information.

Before you know it, performance starts dragging, bugs crop up and the end-user-cum-programmer finds himself doing all the tasks of a database administrator.

"They don't want to have to nurse the thing every night," says Bob Chin, chief information officer at Healthsource, Inc., a health care services provider in Hookset, N.J. "They don't want to deal with the calls at night ... and the user will get scared enough that they will bring in the technical team."

The IS department is then faced with the problem of supporting an application it didn't develop — that is on the verge of catastrophe.

"This is absolutely a problem for IS," says Chet Geschickter, an analyst at Hurwitz Consulting Group, Inc. in Newton, Mass. "There's a lot of homegrown stuff, and people get to the point where they just pass it back to IS."

Dan Chorney, lead database administrator at Chevron Canada Ltd. in Vancouver, British Columbia, agreed. "That's one of our big concerns," he says. On a network of about 300 workstations and 40 servers, "I honestly cannot tell you how many [desktop database applications] we have."

Problem extinguishers

Despite the risk for IS, desktop databases continue to be one of the more popular PC applications — as part of an integrated suite, as in Microsoft's Office, or purchased separately. Dataquest, Inc., a market research firm in San Jose, Calif., predicts this market segment will grow 14% per year through 1998.

The current popularity of these databases stems from their flexibility and end-user programmability. These features allow rapid development of small, single-purpose databases with little investment of IS time and labor.

Wildfire!, *page 80*

Inside

- IS managers say Paradox has the power and Approach is approachable, but Access wins by being just plain solid. Buyers' Satisfaction Scorecard, page 82.
- Access for Windows 95 gets good grades from beta users. Firing Line, page 84.

Illustrations by David Flaherty

CONFUSION.
CHAOS.
MADNESS.

That more or less sums up
systems management these days.

Multiple computing platforms. Multiple operating systems. Multiple vendors. Let's face it–it's nuts out there. In an effort to make some sense out of this mayhem, PLATINUM introduces a radically simple solution called the PLATINUM Open Enterprise Management System, or POEMS. By automating and integrating critical IT functions of both mainframe and open client/server systems, POEMS systems management tools finally make it easy to manage and share information in a truly open environment–one that encompasses all computing platforms. We can even integrate software you already own with the software solutions we provide. Whatever it takes to bring order to the chaos. For more information on the POEMS architecture or our systems management tool set, just turn the page. For a free consultation please give us a call at 1.800.590.7528.

The Open Enterprise Management Company

PLATINUM
TECHNOLOGY

PLATINUM *technology, inc.*, 1815 South Meyers Road, Oakbrook Terrace, Illinois 60181 Phone 708.620.5000 Fax 708.691.0718 ©1995 PLATINUM *technology, inc.*

WILDFIRE!

CONTINUED FROM PAGE 77

Despite the potential for trouble from a few desktop databases that outgrow their origins, Chin is a big fan of these products.

"We use Microsoft Access to keep track of anything from lists of names and projects to some industry-oriented stuff, like tables of surgical codes," Chin says. "There are lots of situations where there is a need for a flexible, small database," he says. "Users are doing this because IS, as an organization, could not possibly do all of these things."

> "There's a lot of homegrown stuff, and people get to the point where they just pass it back to IS."
>
> - Chet Geschickter, analyst, Hurwitz Consulting Group

A side benefit, Chin added, is that by users doing their own database programming and design, "it gives [them] a better appreciation" of the problems IS analysts face in larger development projects.

Stacy Myers, adjunct professor of management at Nova Southeastern University in Davie, Fla., also likes the ease of development that desktop databases provide.

Myers has created several geographic information systems databases using Approach and has helped other users at Nova create databases with Approach.

He chose Lotus' product because of its ease of use. "I could teach a 4-year-old how to use it. It takes five minutes to train someone with no database experience," he says.

Fanning the flames

The ease of use found in desktop databases is a double-edged sword for IS managers, says Randy Buchholz, a technical manager for manufacturing systems at Applied Materials in Austin, Texas. At Applied Materials, desktop databases handle 15 mission-critical applications "and hordes of little ones that are all over the place," he says. His company employs Access, Borland International, Inc.'s Paradox, Superbase, Inc.'s Superbase and Oracle Corp.'s Personal Oracle for production control, shop floor and administrative databases.

Many of Applied Materials' desktop databases were used as small-scale prototypes for eventual enterprise applications. But departmental applications, shop floor controls and labor tracking all remain on the desktop.

Buchholz says the criteria for deciding which applications should stay on the desktop and which should be flagged for migration is a combination of economics and instinct.

When an application remains on the desktop, the support comes from that department. "If we can stay on the desktop, we do. It doesn't cost us anything," Buchholz says.

In general, he added, applications supporting workgroups of 20 people or fewer are left alone.

But when an application has outgrown its developer, and that inevitable call for help comes, Buchholz pursues one of two strategies. The first is to "scrap the thing and rewrite it." In many cases, "you can't afford to support them in the condition they are in," he says.

Buchholz added that having the crippled application is actually an advantage when IS takes over its development. "We use [the application] as a specification tool," he says. "We hand it to the programmers and say, 'We want it to look like this, but we want it robust.'"

The second strategy is "to contain and limit the scope of the application," Buchholz says.

By trimming the application's size, Buchholz says he is sometimes able to keep it working well enough to avoid an overhaul.

Chevron Canada uses Access for stand-alone applications and those pulling data from the company's SQL Server databases, Chorney says.

While the company still has a number of legacy dBase applications, those are gradually being converted to Access. The conversion is "basically a support issue," a way to keep the number of products IS has to support to a minimum, he says.

Like Buchholz, Chorney says users frequently come to him with databases that have gotten out of control.

"They get to a certain point of complexity, then they come to us," Chorney says. This usually occurs once they get beyond half a dozen tables, he says.

Overall, he said is satisfied with Access' performance and ease of use. "The initial releases were very slow, but the speed has picked up," he says, noting that he also expects improved integration with SQL Server in future releases. ■

Jenkins is a freelance writer in Ansonia, Conn.

Graphic evidence

The action in the desktop database management system arena has been in graphical environments

Platform	1993 shipments*	1994 shipments*	% change 1993/94
Windows	2,822	3,325	17.8%
DOS	1,856	1,198	-35.5%
OS/2	179	491	174.3%
Macintosh	904	1,006	11.3%

*Worldwide shipments in thousands of user licenses

Source: Dataquest, Inc., San Jose, Calif.

Local rules

Sometimes you should just leave the database at the desktop

Despite the performance leapfrogs the PC has made, it can still handle only databases of limited size without risk of catastrophe. However, IS managers and analysts say the suitability of an application for a desktop database can be determined not just by size but by the type of application and its usage.

Chet Geschickter, an analyst at Hurwitz Consulting Group, says good candidates don't need to share data with other users or applications, don't need security and have a limited lifespan.

Databases containing largely static information — area code and ZIP code databases, for example — are also good choices for the desktop.

It's just a fact of life that performance degrades with size. "When you get a half-million records on a PC, what did you expect, anyway?" asks Bob Chin, CIO at Healthsource. He says he tries to keep desktop databases under 50,000 records to avoid performance and management problems.

Peter Singer, a programmer/analyst at Knorr Associates in Butler, N.J., has applied Superbase's Superbase to several applications. "We find it fairly scalable. Some of our clients have tens of thousands of records in their databases." However, he notes, "It's not client/server, so when you are dealing with a lot of volume, you won't get those advantages. As it gets bigger, you wish you had something like that."

Singer adds that he has squeezed better performance out of larger applications by keeping the program and executable files local even though the data is stored on a remote server. "We have done things like that to ease the LAN burden," he says.

The inability to support larger database applications isn't simply the limitation of the hardware, however. Windows is a sore spot for developers seeking speed.

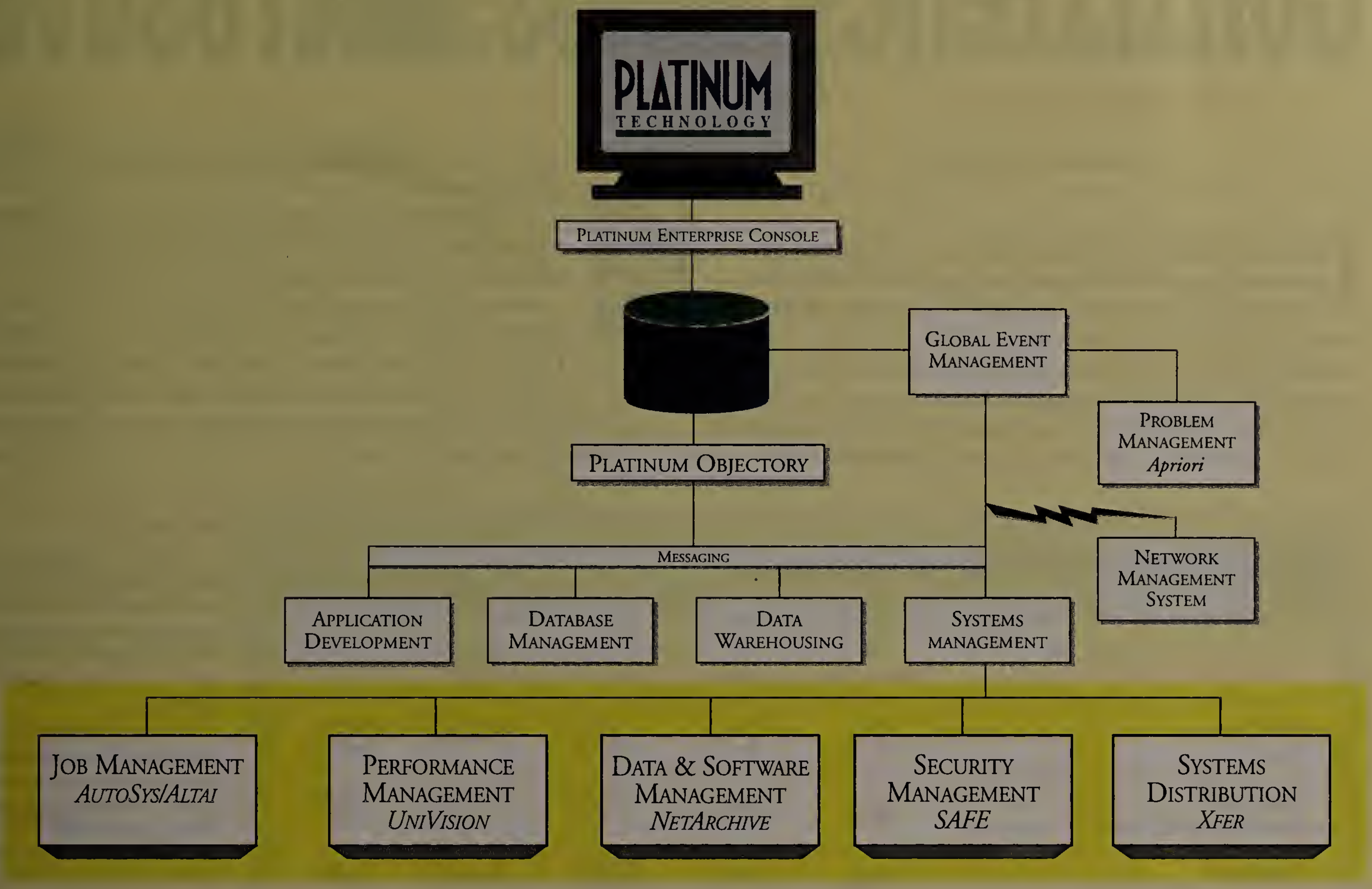
"Windows-based databases are performance pigs," says Jeffrey Angus, a principal at The Data Works Ltd. He adds, "Under DOS, you got very good performance at a good price." But to run equivalent databases under Windows, "you have to spend $2,500 more to get one-third the speed," he says.

That may be true, but PC users can't fight the tide, according to Stacy Myers, adjunct professor of management at Nova Southeastern University. "The way the industry is going, DOS is on its last legs. It's not a good business decision to go with anything DOS," he says.

Waiting is a fact of life with any database, Chin says, and a truly multithreaded operating system, such as Microsoft's Windows 95 or another 32-bit operating system, would eliminate much of the concern over desktop database performance.

POEMS

PLATINUM's Open Enterprise Management System


PLATINUM TECHNOLOGY
Platinum Enterprise Console
Global Event Management
Problem Management *Apriori*
Platinum Objectory
Network Management System
Messaging
Application Development
Database Management
Data Warehousing
Systems management
Job Management *AutoSys/Altai*
Performance Management *UniVision*
Data & Software Management *NetArchive*
Security Management *SAFE*
Systems Distribution *Xfer*

THE METHOD TO THE MADNESS.

To help make sense out of the enterprise systems management chaos, we offer a breadth of systems management tools, each a masterpiece in its own right, designed to make managing and sharing information possible in a true open enterprise environment:

AutoSys/Altai, a technologically superior job scheduling tool set that gives you the ability to centralize and automate the scheduling and management of jobs in distributed MVS, UNIX, and NT environments.

UniVision, a best-of-breed suite of tools that allows you to continuously monitor and manage performance and resource utilization across an array of popular databases and platforms.

NetArchive, provides the only true distributed client/server solution for enterprise-wide backup and HSM.

SAFE, an industrial strength security system that integrates heterogeneous security systems into one seamless environment from a single graphical user interface.

Xfer, the highest-performing software distribution tool, lets you bring order and control to your distributed heterogeneous environments by managing the distribution, configuration, installation, and upgrading of software.

Apriori, the industry-leading help desk tool, provides a patented approach to problem resolution by identifying and answering commonly asked questions without having to invest in intensive programming time.

These systems management tools are just one part of the PLATINUM Open Enterprise Management System (POEMS). We also provide a full complement of tools for data warehousing, database administration and application development – everything you need for managing today's increasingly complex, multi-platform, multi-operating system, multi-vendor environments. For more information or a complete look at how we can help you, please give us a call.

The Open Enterprise Management Company

PLATINUM
TECHNOLOGY

PLATINUM *technology, inc.*, 1815 South Meyers Road, Oakbrook Terrace, Illinois 60181 Phone 708.620.5000 Fax 708.691.0718 All product names mentioned are trademarks or registered trademarks of the respective owners.

Consistency helps Microsoft's

BY JAMES CONNOLLY

COMPUTERWORLD BUYERS' SATISFACTION SCORECARD

JUDGE A DESKTOP DATABASE just on raw power—processing speed and programmability—and Microsoft Corp.'s Access may get whipped by Borland International, Inc.'s Paradox.

But when users looked at more than 20 criteria, Access showed the strength of consistency to edge out two other Windows DBMS products—Paradox and Lotus Development Corp.'s Approach—in customer satisfaction. Access users said their product does plenty of things well and few things poorly.

Access won solid ratings almost across the board. Paradox scored well in most categories of speed, programming and query, but it lagged the Microsoft and Lotus products in terms of usability, installation and support. Paul Cubbage, an analyst at Dataquest, Inc. in San Jose, Calif., says "industrial-strength" desktop DBMS products such as Paradox have lost their appeal for many corporate customers. He says the Paradox user today is more likely to be the exceptional power user.

Edge to Access in overall performance

	E VERY POOR	D POOR	C AVERAGE	B GOOD	A VERY GOOD
Access Microsoft Corp.	0%	2%	18%	54%	26%
Approach Lotus Development Corp.	0%	2%	36%	44%	18%
Paradox* Borland International, Inc.	0%	2%	28%	54%	14%

*2% did not give an opinion

What we did . . .

To measure how three leading Windows DBMS packages are meeting customer needs and expectations, *Computerworld* contracted with First Market Research in Austin, Texas, to survey 50 users of each database.

The respondents addressed more than 20 issues, several of which are shown in the following charts. The charts represent the percentage of users who rated their product good or very good. Most of the remainder awarded "average" scores, with an insignificant number rating them poor or very poor.

Ease of use

	GOOD	VERY GOOD
Access	56%	18%
Approach	34%	38%
Paradox	42%	12%

Lotus scores well with Approach in usability and related areas. Approach customers offer up comments such as "intuitive," "piece of cake," "good for someone who has never used a database" and "good for simple tasks."

Paradox buyers were less enthusiastic about their product's usability, although they were usually not critical. Comments included, "I've had easier things to learn, but it wasn't hard" and "Not bad once you get used to it." Both Paradox and Access had a handful of customers giving them "poor" ratings on ease of use, with those evaluators citing interface problems.

In areas generally related to ease of use, Access and Approach scored well on ease of installation and learning/training time. Approach fell behind both Access and Paradox in the documentation area. However, all three products attracted some criticism for offering documentation that was designed for nontechnical end users rather than for programmers.

Overall speed

	GOOD	VERY GOOD
Access	32%	10%
Approach	28%	12%
Paradox	40%	12%

One long-standing complaint about Windows DBMSs is that they just can't keep up with their DOS predecessors, and user experiences indicate that none of the three products excels in this area. However, Paradox does record "good" or better scores more than half the time.

Two patterns emerge from the user comments. First, users recognize that most Windows applications can be slow but that the current versions of the DBMS packages show gains over previous releases. Second, users may have to throw hardware at the performance problem. Typical comments about hardware: "[Access] depends on the machine you have," "Running on a Pentium is fine, but [Paradox] slows down on others."

In a related area, Paradox led the field with the best marks for speed of query processing. Approach trailed both Paradox and Access in that category.

Cubbage observes that users typically want Approach and Access for quick answers to relatively simple queries. They use Paradox for more complex applications.

Access take charge

Good overall showing edges out Lotus' Approach, Borland's Paradox in Windows DBMS arena

Flexibility of queries and scripts

	GOOD	VERY GOOD
Access	26%	26%
Approach	20%	14%
Paradox	44%	20%

It's in the area of queries and programmability that Paradox shines and Approach suffers. Paradox scores well with its users in flexibility of queries and scripts, robustness and flexibility of programming language and speed of programming. Access typically scores a respectable second place in those areas.

Several customers said they had yet to discover a query that Paradox could not handle. Yet they also acknowledged that it can be difficult for first-time users to find their way around the Borland package.

When asked about the robustness of programming languages, Borland users tended to offer comments such as, Paradox "can do anything you want it to do" and "It has all the capabilities we need."

Positive comments about Access and Approach typically focused on their integration with other products such as Microsoft's Visual Basic language or Lotus' SmartSuite.

Compatibility with operating system

	GOOD	VERY GOOD
Access	16%	56%
Approach	26%	32%
Paradox	28%	42%

Users gave compatibility issues their highest importance rankings, with network compatibility placed right behind operating system compatibility.

There may be a distinct edge to selling both the operating system and the application, but that advantage isn't overwhelming if you compare Microsoft's numbers with Borland's.

Even those users who gave their DBMS low ratings for compatibility with their operating system did so because of problems they had taking advantage of software outside the Windows 3.1 environment, including OS/2 and Windows NT.

In the category of compatibility with network environment, users showed less confidence in their products, with only about half rating them good or very good. In areas where users cited problems, they included complaints about performance and setup when putting a DBMS on a network.

The desktop products drew mixed reviews on compatibility with server-based DBMSs. For example, Approach and its implementation of Open Database Connectivity landed noticeable numbers of both "poor" and "very good" ratings.

Value for the dollar

	GOOD	VERY GOOD
Access	22%	40%
Approach	30%	22%
Paradox	26%	28%

Customers obviously wanted to get their money's worth. They ranked "value for the dollar" right behind compatibility and ease of use in terms of importance.

It may have been a case of "the price is right" for Microsoft. Almost two-thirds (62%) of the Access users said they bought the product as part of Microsoft's Office suite. Access also posted the best scores in terms of user satisfaction with acquisition and support costs. That may have been the reason behind most Microsoft users rating it "very good" in terms of value.

"Access is getting good pull-through from Office, but people buy Paradox because they want Paradox itself," Cubbage notes.

However, there were few strong criticisms of the pricing and value for the desktop DBMSs at large. Comments from various users indicate that site licenses and office suite bundles have kept costs down at a time when the customers are typically satisfied with product performance.

Likelihood of buying the product again

	SOMEWHAT LIKELY	VERY LIKELY
Access	4%	80%
Approach	32%	54%
Paradox	30%	56%

Don't expect a lot of users to dump their DBMS for another. Most users say they are pretty confident that they would buy the same product again.

Good experiences, corporate standardization, good reports on ease of use and value for the dollar were among the dominant reasons cited by users who say they are very likely to buy the same product again.

Bundling again plays a factor, with Access users in particular saying that what they get for the price is appealing. However, users of all three products often gave a common answer when asked why they would buy the same DBMS again, saying simply that they were satisfied with their current product.

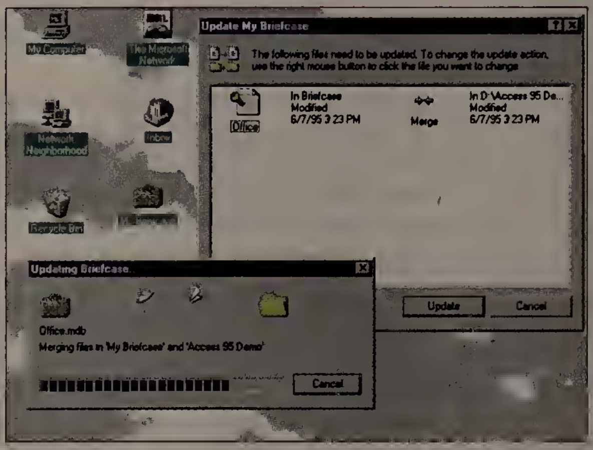
Among the reasons cited for users being unlikely to buy the same DBMS again were several complaints that Approach "doesn't do the job" and observations that Access and Paradox were too difficult to use.

Win 95 changes rules for DBMSs

Access 95 entices beta users with its 32-bit core engine and VBA language

BY KEVIN BURDEN

Microsoft Corp.'s Access for Windows 95 is a hit with beta users interviewed this month. Users said Microsoft made great strides in reducing Access' complexity. However, they said performance still needs work and that the third beta release barely improves on Version 2.0's speed in I/O-intensive tasks. Users graded Access 95 on a five-letter scale based on A (very good), B (good), C (average), D (poor) and E (very poor).



The following files need to be updated. To change the update action, use the right mouse button to click the file you want to change

Merging files in 'My Briefcase' and 'Access 95 Demo'

Using the Briefcase in Windows 95, *users of Access 95 can work remotely with replicated copies of their database then merge changes back into the master database*

Users interviewed for this evaluation include the following:

🟩 **Software development company No. 1**

🟨 **Information processing company**

🟦 **Software development company No. 2**

🟪 **Systems integration company**

SPEED

B B C B

As long as you don't expect Access 95 to double the speed of Access 2.0, you won't be disappointed. Evaluators say its 32-bit Jet engine most noticeably improved data retrieval times.

"We have seen the best increases in CPU-intensive tasks like retrieval," says Luke Chung, president of FMS, Inc., a database development firm in Vienna, Va. "Unfortunately, database tasks are mostly I/O-intensive, and except for our systems we stacked with memory, we haven't seen much of an improvement [in I/O performance]," he says.

Microsoft recommends a minimum of 8M bytes of memory, although evaluators say they can't conceive running Access 95 on anything less than 16M bytes. The evaluators acknowledge they haven't yet completed their memory management testing, but they did notice Access 95 grabbing large amounts of memory to load buffers.

The question is, "Does [Access 95] give it back gracefully as other applications start up?" asks John Viescas, president of Viescas Consulting, Inc., an information processing company in Redmond, Wash.

MANAGING INFORMATION

B B A B

Many of the functions that make databases difficult and confusing — such as creating a new database — have been masked and automated through wizards. Wizards aren't new to Access, "but the ones in 2.0 are not nearly as sophisticated as those in the 95 version," Chung says.

Evaluators singled out Access' new Database Wizard as the most helpful to users who want to help themselves. That wizard essentially builds an application based on the information users single out to be tracked. "Between the wizards and database templates, you don't need a great deal of expertise to build applications," says James Foxall, vice president of IMC, Inc., a software development company in Omaha.

Although the wizards and searching filters are intended to make life easier for end users, developers will also find them valuable. For instance, filter by form modes can take several days to develop, according to Chung. "Now I add the filter through a simple menu selection," he says.

An old Access problem still not addressed in the 95 version is the ability to have multiple databases open simultaneously.

INTEGRATION

A A A A

Access 95 is a full OLE Automation server unlike Access 2.0, which was only an OLE Automation controller. This means users can now send commands such as "CreateTable" to Access while in Excel or any other OLE-enabled application. Version 2.0 allowed users to control only other OLE applications. "I've used it enough to know that it works," Viescas says. "But its real integration charm is its [Visual Basic for Applications] language."

Visual Basic for Applications (VBA) is the standard development language for Microsoft Office. Beyond Access, VBA is also included in Microsoft Excel and Microsoft Project. VBA looks very similar and appears to just extend Access Basic with a bunch of new tools, according to Viescas.

PROGRAMMING ENVIRONMENT

A B A B

Beyond the benefit of a common language across the Office suite, evaluators gave stellar grades for the development environment because VBA builds on the best of Visual Basic.

"Color-coded syntax while editing code is a terrific [Visual Basic] feature that found its way into VBA," Chung says. "Plus, [Microsoft] added superior debugging tools and editors."

Converting Access 2.0 databases to Access 95 was smooth and easy, evaluators say. However, "once converted, there is no going back," Chung says. The conversion is strictly one way — meaning everyone must be on Windows 95 before moving the data over.

Burden is *Computerworld*'s senior researcher, Firing Line/Scorecard.

Microsoft responds:

According to a Microsoft spokesman, performance will improve as Access 95 gets closer to its final code. Like any test release, early beta versions have room for improvement.

There is no way to simultaneously have multiple database files open within a single instance of Microsoft Access 95. However, one database file can contain many tables, forms, reports and queries.

SNIPPETS

Excerpts from selected DBMS product reviews

▶ "If you need more than a weak entry-level database, but industrial-strength application development is less important to you than getting to your data with the minimum of fuss, Lotus Development Corp.'s Approach 3.0 is the product for you."
— *Computer Shopper, April 1995*

▶ "Microsoft FoxPro is the best overall at arranging tables, although its help system is less than satisfactory. Lotus Approach is the weakest, with a relatively poor interface, although it has the best import features and explicit help. FoxPro and Borland Paradox are weak in these areas.

"The Windows interface makes forms intuitive for end users on all the products, but especially on Microsoft Access. Access and FoxPro do not have good forms features for power users; Approach proves to be better in this area. Paradox and Approach both have good query-building features for end users, but Paradox is too difficult for power users.

"FoxPro, which is targeted at the high end, has good advanced query building. Compiling reports is easiest in Approach for both novices and power users. Approach also has the best support for custom controls. Borland's dBase rates average in most areas. Approach is rated th best product overa for usability."
— *PC Computing (comparison of five Windows DBMS products), March 1995*

▶ "FoxPro is known as the fastest desktop database available today, and [Visual FoxPro 3.0] does not disappoint. . . . If a high degree of control over your application is required, or you are using large data sets, then Visual FoxPro is the database of choice. Microsoft's other database product, Access, is targeted for end-user development and smaller applications."
— *InfoCanada, April 7, 1995*

THE PATH FROM LEGACY TO OBJECTS

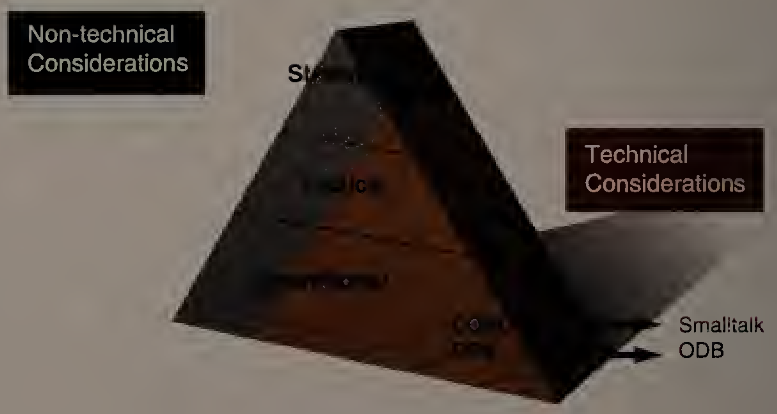
pecial Advertising Supplement

Introduction by
IDC
INTERNATIONAL DATA CORPORATION

By Stephen S. McClure
Director, Object Tools
International Data Corp.

Object Oriented (OO) technology is a new way of developing software that builds on conventional software design concepts such as modularity, abstraction and data encapsulation. A software object combines both the data and all the procedures or code required to process the data in one place; a collection of software objects working together form an application. Why is there such interest in OO technology? The reason usually given is that OO enables developers to more effectively cope with such issues as:

FIG. 1: NON-TECHNICAL ISSUES ARE CRUCIAL



Complexity. Business needs are becoming more complex. Developers are being asked to build not only standalone applications but distributed integrated systems that span business units worldwide as well. Businesses cannot survive on numeric and text data alone; they now require new data types such as video, pictures, graphs, lists, arrays, charts and sound.

Flexibility. A trend toward downsizing and rightsizing by Fortune 1000 firms is spreading. New information systems are needed that can adapt to changing business organizations, and structures that increasingly link vendors, providers and customers via global networks.

Responsiveness. Products are being introduced faster than ever before. Often the only limitation is how soon information systems can support them. Businesses need not only faster development cycles but better data integration, quicker retrieval and the ability to frame complex queries in point-and-click modes.

Quality. Software must satisfy business objectives in terms of ease of use, performance and availability. It should also be faster to develop, debug, modify and enhance. Software quality is directly related to design and coding issues such as modularity, encapsulation, coupling and cohesion.

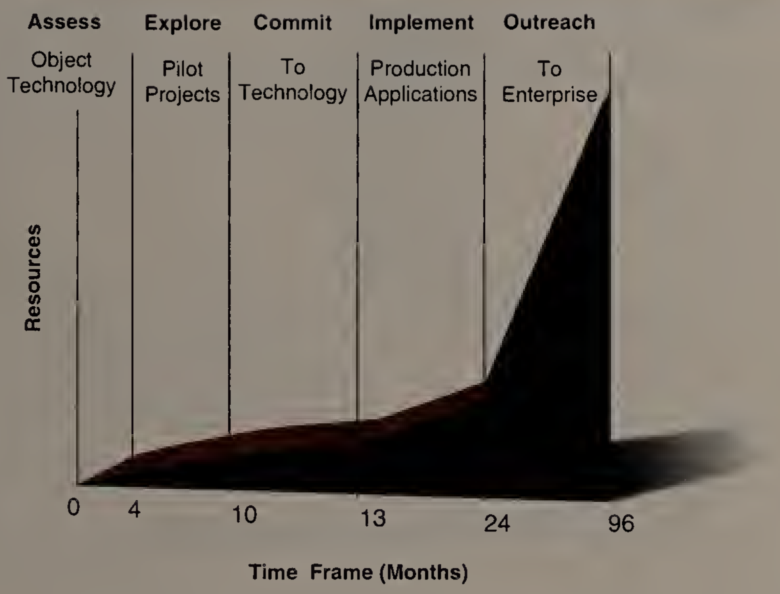
Expressability. Few enterprises involve end users throughout a project's requirements, analysis, design, coding and testing phases. On most IS projects, end users are only involved during requirements specification, then are asked to implement a system 12 months later. One reason is that IS professionals use their own vocabulary to express their work during the analysis, design and coding phases, a jargon that includes such constructs as entity relationship diagrams, hierarchy charts, and programming languages.

OO lets analysts and designers communicate with end users in the language of objects — a language all of us have used since birth. Being able to express end-user requirements in object terms and using these same terms throughout the process has accelerated system development. End-user participation throughout the life cycle insures higher quality requirements and a higher likelihood that the delivered system will meet end-user needs.

But an enterprise can only reap the benefits of OO if it has a migration plan. Migrating to OO takes more than methodology and tools training. It takes focus, vision, and a tried and true process.

Focus. Many IS departments ignore cultural issues. As shown in Figure 1, technical considerations are critical at the operational level but not at the strategic level. Any migration to OO must take into account non-technical issues such as underestimating the enterprise's and developers' resistance to change.

Fig. 2: Process for being on leading edge of OO



Vision. An enterprise should first create a high-level object model and identify how the high-level objects relate to each other. The initial object model will be refined as projects are implemented. The model will serve as a framework for understanding the business and developing a reusable object library.

Process. Figure 2 depicts a five-stage process for implementing OO. It can take six to ten years, depending on the enterprise. But by cautiously investing resources, an enterprise can be assured of being on the leading edge of OO, rather than the bleeding edge.

Assess Technology can be a five-month process, and is used to understand the OO development model and available methodologies, OO languages and tools, and the potential impact of OO. In this stage, the team can interview vendors, and assess languages, tools and methodologies. Management can create a profile of current staff (i.e., their skills in structured techniques, languages and tools) and the current environment (i.e., consistent or inconsistent use of metrics or methods).

The main deliverable is a report covering needs assessment, organizational impact, recommendations of languages/tools, and risks/benefits of OO.

Explore Technology is a six-month focus on training OO development teams, acquiring technology, hiring mentors and scheduling and delivering at least two pilot projects. Pilots should be: important but not time-critical, have definable requirements, add business value and last four to six months.

Each pilot team can use its own approach. A team of developers with little training in formal structured techniques may be better off using a repetitive prototyping scenario coupled with an OO language that is an extension of an existing language, i.e., Object COBOL. The goal is for the teams to work as a unit.

Commit to Technology is a three-month effort allowing both end-user and MIS management to review results of the prior stage and decide to proceed or to do additional pilots.

Implement Technology is a 12-month effort that results in the implementation of at least two OO production applications.

Outreach to all Business Units can take a few years. In this stage, project overseers should build new development teams by seeding them with members of successful teams.

Stephen S. McClure is the primary researcher, writer and consultant for IDC's Object Tools market planning service, which focuses on all aspects of object technology, including object-oriented analysis, design and programming; GUIs; and object database management systems. IDC, based in Framingham, Mass., is the IT industry's leading provider of market research and consulting services.

When it comes to software development, many companies today are facing a crisis. The time allotted to complete projects is going down. Both software quality and programmer productivity are under pressure to improve. And the only way companies can resolve software analysis and design problems is to rely more on software testing and continually improving development tools.

To escape this dilemma, many companies have started migrating to objects. The primary benefit of object techology — reuse of software components — has helped lower project risks and improve software quality.

But if object technology is to have a major impact on the millions of business application developers, experts are looking to object-oriented (OO) COBOL. OO COBOL permits corporate developers to migrate existing legacy applications to an OO environment and enables COBOL programmers to evolve to OO without learning an entirely new language.

Determining the best OO development environment depends on a specific project's requirements. For most business application development tasks, the best solution is Object COBOL from Micro Focus. Micro Focus Object COBOL is a versatile 32-bit COBOL compiler, offering application builders both ANSI standard COBOL and object-oriented COBOL in one product.

FIG. 3: FEATURES OF OBJECT COBOL

OO FEATURES SUPPORTED BY OBJECT COBOL:

- Objects ✓
- Methods ✓
- Classes ✓
- Class libraries ✓
- Messaging ✓
- Encapsulation ✓
- Inheritance ✓
- Polymorphism ✓
- Dynamic binding ✓
- Class browser ✓
- Component development ✓

FEATURES UNIQUE TO OBJECT COBOL:

- Support for procedural COBOL ✓
- Legacy migration tools ✓
- Vocabularies (end-user language) ✓
- Component integration ✓

Micro Focus Object COBOL offers five key features. It:

- Supports existing COBOL
- Contains legacy migration tools
- Functions as a component integration language
- Can be used as a component development language
- Can be used as an OO programming language.

Note that the first four of these features do not require programmers to be OO experts.

Potent mix

The combination of OO technology and COBOL is a potent mix for creating an application development environment. Many observers view OO COBOL as the gateway that will allow many organizations to experience the benefits of objects for the first time. Such benefits include improved reliability, faster development and reduced maintenance.

In short, Object COBOL represents the best of all worlds. It is a true OO development environment — like Smalltalk — but with the scalability of C++ and the portability of COBOL. And, like COBOL, it can be found on a wide range of industry platforms, including Windows, OS/2 and Windows NT . . . and soon, UNIX.

These are key factors for companies considering object technology. Objects are becoming critical in the development strategies of companies that want to move legacy environments to client/server. OO brings the advantages of reusability, flexibility and adaptability, enabling businesses to take existing code and change part of it or add to it without having to rewrite it all.

Object technology loses much of its luster if it requires rewriting code. The #1 reason to move to objects is reuse. Although many OO vendors preach reuse, the truth is, if you move to their environments, you start from scratch.

That's not the case with Object COBOL. Some 80% — or nearly 3 million — of all programmers today use COBOL. If a company decides to use Object COBOL on a project, its staff's familiarity with COBOL will not go to waste. The staff will be able to use not only existing skills, but also existing data, existing code and their knowledge of the business.

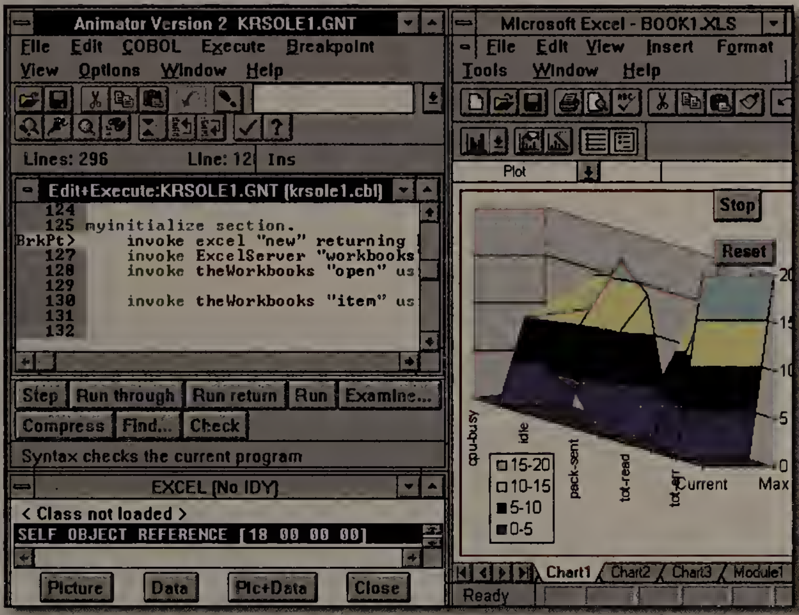
When technology is constantly changing, that ability to leverage existing expertise is critical. Consider the software developer who had to port millions of lines of COBOL code to a distributed client/server environment. The developer, needing to reengineer that code to take advantage of component-based development, chose Object COBOL to avoid the massive effort of switching several hundred developers to a new language.

Object COBOL can co-exist with legacy code. For users transitioning from procedural legacy code, Object COBOL provides a way to reap the benefits of OO, without rejecting everything that already exists. It allows users to bring their skills — and past investments — to an object environment and evolve into OO at their own pace.

Real-world modeling

Object COBOL also fits with the way businesses are being reengineered today. It can serve as a real-world business modeling tool. Much of the data processing used to run mission-critical applications is serial. Procedural code works serially, but has difficulty mimicking today's more interactive business processes. People working on these systems must interact with information and respond to events. Users who have implemented OO can better model these event-driven environments, because they can respond to random or intermittent events. They could not do this with traditional data processing applications, which had to know the order in which things would happen.

The reason Object COBOL is such a strong real-world business modeling tool is simple: the COBOL language is designed for business. Other object-oriented languages are capable of real-world modeling, but are more applicable to the scientific and academic communities and more suited to systems programming than business application development. They are most often used by vendors of packaged software.


Animator Version 2 KRSOLE1.GNT
File Edit COBOL Execute Breakpoint
View Options Window Help
Edit+Execute:KRSOLE1.GNT (krsole1.cbl)
Step
Run through
Run return
Run
Examine...
Compress
Find...
Check
EXCEL (No IDY)
Picture
Data
Pic+Data
Close
Microsoft Excel - BOOK1.XLS
File Edit View Insert Format
Tools Window Help
Plot
Stop
Reset
20
15
10
5
0
cpu-busy
idle
pack-sent
tot-read
tot-err
Current
Max
15-20
10-15
5-10
0-5
Chart1
Chart2
Chart3
Module1
Ready

Lines: 296 Line: 12 Ins

```
       myinitialize section.
BrkPt>     invoke excel "new" returning
           invoke ExcelServer "workbooks
           invoke theWorkbooks "open" us

           invoke theWorkbooks "item" us
```

Syntax checks the current program

```
< Class not loaded >
SELF OBJECT REFERENCE [18 00 00 00]
```

Through OLE2 automation, Micro Focus Object COBOL can be a scripting language for desktop tools such as Microsoft Excel.

When some people hear the word COBOL, the image that comes to their minds is that of a mature language (COBOL was conceived in 1959). But through the addition of both low- and high-level features, the "old" COBOL has evolved into a state-of-the-art, 4GL-like language resting on top of an industrial-strength 3GL infrastructure. Some people think that Object COBOL can't be a true OO development environment because it's based on COBOL. They still think of COBOL as the batch processing language it was 30 years ago, not the language used today to write interactive, event-driven applications running on PCs, servers and mainframes.

Object COBOL is built on a model similar to the Smalltalk OO model, and supports inheritance, polymorphism, encapsulation and dynamic binding (see Fig. 3). In an OO environment, binding refers to when an object's behavior is resolved. In dynamic binding, it is resolved during execution; in static binding, at compile time. Dynamic binding is more flexible; static binding provides the best performance. But Micro Focus has optimized dynamic binding based on a "last-time-executed" technology, making it almost as fast as static binding in most instances. Ultimately, Micro Focus Object COBOL will support both dynamic and static binding.

Object COBOL has many advantages over

other OO languages. Because Smalltalk is not as compatible with existing software and skills as COBOL, it has a high learning curve and limited reuse. Smalltalk also suffers from limited scalability and is not available on a broad span of platforms (it does not yet run on mainframes.) Because of these scalability issues, Smalltalk is most often used as a departmental tool, primarily by the academic and scientific communities.

C++ is more scalable than Smalltalk, though also not very portable. But compared to Object COBOL, it is less pure to the OO model, harder to learn and nearly impossible to maintain. C++ is optimized for development, but the truth is, IS shops spend most of their time maintaining existing applications. OO COBOL is optimized for maintaining applications.

It makes sense for a company building a screen painter to use C++, since the application will need to be high performance and will probably be rewritten every six months. But some business applications last over 10 years. They will be maintained by many people, some of whom will come on board in the middle of the project and will have to understand what has happened before. In this case, Object COBOL is the better choice, because it is optimized for the long term.

Rewards clarity, not cleverness

COBOL is very much like the English language. Its syntax is a bit more verbose than C++, but that makes it more understandable. C++ programmers often try to create code in as few lines as they can; programming in C++ rewards cleverness. But this leads to unmaintainable applications or, at best, more costly application maintenance. Object COBOL is written for clarity, not cleverness.

Object COBOL goes a step further by allowing the syntax of the language to be extended using "vocabularies." Using vocabularies, it is possible to write code in a language familiar to the analyst or end user, or even in a foreign language.

Object COBOL is highly scalable. Object COBOL currently runs on Windows, OS/2 and Windows NT. Before year-end, Windows 95 and a variety of UNIX platforms will be added to that list. The Micro Focus Object COBOL compiler will eventually be available on hundreds of platforms (as is its current COBOL). The more platforms Object COBOL is supported on, the greater the

Support for the coming standard

The X3J4 Technical Committee, a subgroup of ANSI, is hard at work on a standard for OO COBOL.

A standard is needed to leverage the large amount of systems and skills that exist in COBOL. The less change OO COBOL imposes on developers, the more successful it will be.

Even though the COBOL architecture itself has been extended to support an OO environment, Object COBOL will still be familiar to COBOL programmers. There is little new syntax in Object COBOL — the only new verb is INVOKE — but programmers will still have to learn how to design OO applications.

The next ANSI standard for OO COBOL is not due until 1997. But that doesn't mean that nothing will happen before then. A published standard document already exists, although it won't be officially adopted until 1997. And right now, that standard is almost complete, allowing users of the current version of Object COBOL to create applications that conform to the proposed ANSI standard. In addition, Micro Focus Object COBOL has optional extensions (such as vocabularies) to make the transition to OO programming easier. Micro Focus will be 100% committed to supporting the standard once it is adopted.

potential reuse of past investments.

Like IBM, Micro Focus is working on an OO COBOL tool for mainframes. Most code on mainframes is COBOL. Some 75% of corporate data resides not in relational databases but in VSAM files, flat files and IMS databases. COBOL provides access to those applications and data.

Existing legacy applications encapsulate data and code. Using "COBOL-as-a-class," a unique feature of Micro Focus Object COBOL, a legacy program may be defined as a class. This is done by recompiling the application, where the application becomes a newly defined object. COBOL-as-a-class is a tool for migrating legacy applications into the object world.

Today, objects are mostly used in departmental situations and by advanced technology groups. But the tools that allow developers to build mission-critical systems with OO are appearing. Tools will play a big part in helping companies move to OO COBOL. In addition to already offering a rich set of class libraries, Micro Focus has started a partners program for class libraries, and there is much interest in third parties developing vertical (industry) class libraries.

Object COBOL's development environment is rich. Its graphical Class Browser enables users to view existing class definitions and create new subclasses. It is linked with the Micro Focus Animator®, the best GUI language debugger and editor available. Animator was designed specifically for COBOL, but can also work with other language debuggers. Micro Focus is in the process of tying its rapid application development tools into Object COBOL.

Object COBOL supports the development of "components," or business objects, using the OO language. Application developers may one day be divided into component developers and component integrators. While Object COBOL supports both, the latter need not be OO experts.

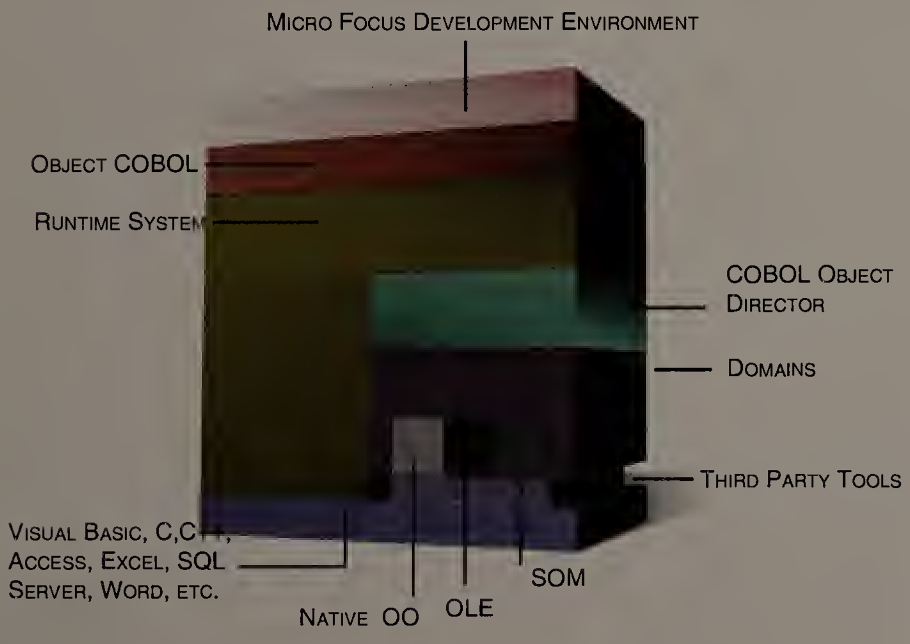
Object COBOL can also be used as a component integration language, meaning it can be used to script the use of other desktop tools as either a client or server. The first 32-bit compiler with language support for OLE automation, Object COBOL can be used to script, or drive, Microsoft Excel, Visual Basic, Word or Access as OLE clients or OLE servers. (OLE 2 is Microsoft's API for talking to desktop applications; OLE 2 automation is the API for making those applications do things.) Object COBOL will also work with SOM (IBM's Object Request Broker). Via use of this technology, enterprise application logic and data can be brought to the desktop.

Micro Focus Object COBOL uses "domains" to allow COBOL applications to talk to OLE, (D)SOM or other Object COBOL applications. This makes Object COBOL a very open object environment.

Micro Focus released its 32-bit Object COBOL Version 3.3 in February. The only 32-bit OO COBOL on the market, it erases walls between languages, allowing better inter-language cooperation (i.e., COBOL can call C and vice versa). For a company implementing OO, a mixed language environment is much easier to work in.

But the key reason Object COBOL will succeed is because it provides a way for everyone to reap the benefits of OO, and to do so without rejecting everything that already exists.

Fig. 4: Micro Focus Development Environment


Micro Focus Development Environment
Object COBOL
Runtime System
COBOL Object Director
Domains
Third Party Tools
Visual Basic, C,C++, Access, Excel, SQL Server, Word, etc.
SOM
Native OO
OLE

Micro Focus® Object COBOL™

Object COBOL can help your business application do things it's never done before.

What could you do if your COBOL code were rejuvenated, made more productive and easier to maintain? By moving to object orientation, you can make it all happen. Bring the benefits of Object COBOL, including 32-bit performance and multiple language support, to your business application development environment.

With Object COBOL's support for OLE2 automation on Windows NT,™ end users will have greater access to corporate information through OLE2 server objects. Data previously tied up in enterprise-wide systems can now be brought to the desktop through the power of popular business programs such as Microsoft® Word, Excel and Access.™

Object COBOL also contains an exclusive Micro Focus feature that makes COBOL programs easier to read and write: Requirements-Based Vocabularies. Vocabularies allow you to create applications that use the language of your business. For example with Object COBOL, to add money to an account you could simply code "Deposit amount into account."

See why Object COBOL is the one environment that gives your current business applications the freedom to go beyond their limitations.

See for yourself. Contact Micro Focus at 800 MFCOBOL Ext. 1201 and ask for your copy of the Micro Focus CD. On it, you'll find descriptions and interactive demonstrations of Micro Focus development tools, including Object COBOL.

A Better Way of Programming™ **MICRO FOCUS®**

Micro Focus is a registered trademark. Object COBOL and "A Better Way of Programming" are trademarks of Micro Focus Ltd Other trademarks or registered trademarks are property of their respective companies.

AN INTERVIEW WITH

cliff stoll

Andy Freeberg

This security expert, network pioneer and best-selling author is sick and tired of Internet hype

By Lory Zottola Dix

He is an unabashed computer lover who was messing with a punch-card IBM 1620 at the ripe old age of 13 and programming in assembler and Fortran soon after.

He is a pioneering Internet user, having logged on to its precursor, the Arpanet, in 1975 as a graduate astronomy student in California. Stoll's networking expertise came in handy 11 years later when he found himself traversing the Internet to chase down German hackers who had broken into computers at Lawrence Berkeley Laboratory in California, where he worked as a systems manager. He turned the tale of that escapade into the best-selling book *The Cuckoo's Egg* (Doubleday, 1990).

But inside this self-described "propeller-head" lurks — insert scary monster movie music here — an Internet skeptic.

In his new book, *Silicon Snake Oil* (Doubleday, 1995), Stoll reveals how he has grown disillusioned with the 'net and the World Wide Web. His experience has been of a place in which really boring people say really boring things. Trying to find useful information for business means wading through tons of "puerile juvenilia."

If that's what the information superhighway is, then Stoll has better things to do with his time, including piecing quilts, repairing old radios and spelunking.

Stoll puts the blame for Internet hyperbole squarely on the shoulders of techies — including himself. He claims that technically adept people avoid thinking critically about the 'net "because, hey, it's much more fun to fool around on-line than to challenge the usefulness of our on-line systems."

STOLL, 45, SPOKE RECENTLY WITH *COMPUTERWORLD* FROM HIS HOME IN OAKLAND, CALIF., WHERE HE LIVES WITH THREE CATS HE PRETENDS TO DISLIKE.

COMPUTERWORLD: What made you start questioning the usefulness of the Internet and the World Wide Web?

CLIFF STOLL: I get maybe 40 to 60 letters every day. In the past, because I made a point of answering all of them, it would take hours just to answer my E-mail. Spending three, maybe four hours every day just answering E-mail swallows a chunk of my life.

I started asking the obvious question — how many other people are spending more than an hour of their day on nonproductive work because of the Internet? Might it be that many people are wasting huge amounts of time prowling around the World Wide Web, downloading cute files, watching pretty pictures on their computers, tuning their screen savers?

I started thinking that maybe other people were in the same boat I was. Namely, that the amount of time I save by being able to find a piece of information on-line is almost exactly negated by how much time I waste every day by being on-line.

CW: What about getting help with intelligent agents or filters?

Stoll, *page 88*

5 Five Ways My Company Can Help Your Company Make Better Business Decisions

The best way to improve decision making is to start with good information. Complete. Accurate. Current. And available to everyone who needs it—when they need it.

Turning corporate data into real business information, and delivering it to the right people at the right time, is our business.

We've been doing it for almost 20 years for many of the world's most successful companies. And we can do it for you. Here's how:

Dr. James H. Goodnight
President, SAS Institute Inc.

1

Data Warehousing There's no better way to stage the data used in decision making. Put it where people can get to it without a lot of nonsense—and away from your on-line transaction processing systems. Your decision makers will get consistent and up-to-date data they can use—without dragging down the performance of your operational systems. Whether you need a complete end-to-end solution for data warehousing, a piece here or there, or just some good advice, we can help.

2

Business Intelligence You've heard all the buzzwords (EIS, DSS, OLAP, Intelligent Query, Visualization). But what do they all mean? As a collection of incompatible products, they could mean trouble. But together and fully integrated into a comprehensive decision support environment, they could mean making good business sense out of reams of raw data. We provide them all. And we can design just the right mix for you.

3

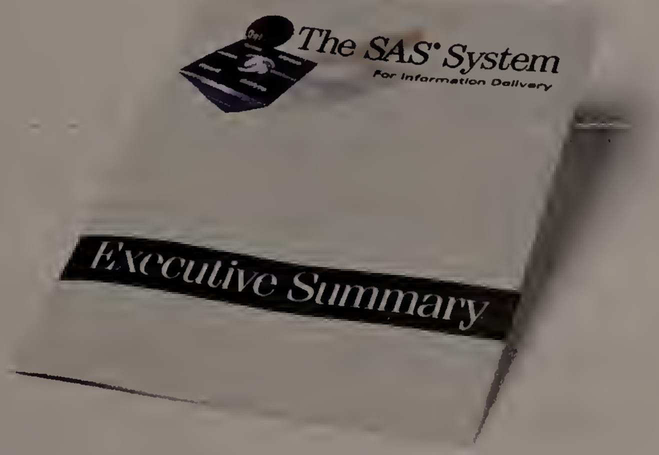
Technical and Analytical Tools Of course, decision making is not unique to the business side. If you have quality issues on the shop floor or need to analyze the results of your market research, we can deliver the industry's richest set of tools for handling virtually any analytical need.

4

Applications Development If you need to build decision making into customized systems to get a jump on the competition, count on applications development tools ideally suited for decision support. Count on ours. Our iterative approach to rapid applications development can shave months off of your development cycles, and get the right information into the hands of your decision makers faster.

5

Business Solutions Maybe you're not ready to tackle that system alone. You won't have to. Our professional services staff can help you as much (or as little) as you require. We can train you, sit beside you, or build complete decision-based applications to your specific requirements.



The Bottom Line **Better decision making can give you the competitive advantage you've been looking for. And if you're a Fortune 500 company, there's an excellent chance we're already at work helping you. To find out the role our technology and services can play in your organization, and to receive our free guide, give us a call or send us E-mail at cw@sas.sas.com**

SAS®

SAS Institute Inc.
Phone 919-677-8200
Fax 919-677-4444
URL: http://www.sas.com/
In Canada: 1-800-363-8397

SAS is a registered trademark of SAS Institute Inc.
Copyright © 1995 by SAS Institute Inc.

cliff stoll

CONTINUED FROM PAGE 85

Stoll: The problem with intelligent agents and filters is that they can never do anything more than a crude approximation of my desires and wants.

The thing that I do want a machine to solve is something that a machine can't solve — namely, "give me only the E-mail that is essential in my work." For me to program that is for me to know what is essential in my work, and I don't know that. It changes every 20 minutes. As an example, I would never in my life program an artificial intelligent agent to tell me what's happening in Oklahoma City. Yet, all of a sudden last April, a bomb goes off and everything in Oklahoma City is important and essential.

CW: If you're not careful, you might be labeled a Luddite — someone who is opposed to technological change.

Stoll: But I'm not a Luddite. I have a half-dozen computers in my home. I regularly log in, I'm on five to 10 networks, I have no shortage of E-mail addresses. The point is, I love computers. It's the cult of computing that gives me the heebie-jeebies.

CW: Can you explain what you mean by "the cult of computing"?

Stoll: We as techies, we as programmers, systems people, computer jocks, propellerheads, bitheads, whatever, have always lived in this insular, isolated world where we get status simply by being computer jocks. We think of others as being left behind. If you don't have an E-mail address, you're in the Netherworld. If you don't have your own World Wide Web page, you're a nobody.

> I'm not a Luddite. I love computers. It's the cult of computing that gives me the heebie-jeebies.

I feel that this is the very type of technological arrogance that we as techies should avoid if we're ever going to make our technical world a friendly one. Merely that I have a World Wide Web page does not give me any power, any abilities, nor any status in the real world.

CW: Do you think the 'net is a great place for business users to get information they need to do their jobs?

Stoll: I'm concerned that for all of the on-line wonders, there is damned little content on-line. Very little of what I see on-line has any value, other than as juvenile entertainment for adults. And that has its place. I'm not saying it's a bad thing to have nothing but entertainment there, but if that's all it's ever going to be, hey, I've got other things to do with my time.

CW: Can you imagine a business world without, say, Internet E-mail?

Stoll: I can think of gobs of businesses where the Internet is irrelevant. Start with the ice cream store down the street. How about the garage that services Toyotas? Do they need Internet access? No. What they need to do is fix Toyotas. How about the plumbing shop down the block? Do they need Internet access? No. They need pipes and wrenches. How about the business next door to that, the one that sells fashions? Do they need Internet access? No. What they need is lots of rich people who are fashion conscious.

CW: But what about large businesses — say, a large retail chain like Sears. Are you saying the Internet is irrelevant no matter how big the business is?

Stoll: What I'm saying is there is a huge number of businesses for whom the Internet is irrelevant. We in computing like to think that, "Oh, everybody is like us. We find computers handy and essential. Everyone else must think so, too." It ain't so.

CW: What about using the 'net for collaborative meetings or brainstorming sessions?

Stoll: Aw, come on. Have you ever been to one of these brainstorming sessions on-line? They're worthless.

I've been on Internet relay chats and the only time that problems got ironed out was when people all sat in the same room together and hashed it out.

CW: Do you think that electronic commerce will thrive?

Stoll: I do not perceive an upcoming fountain of commerce over the World Wide Web for a number of reasons. The Internet and computer interactions will not replace classical commercial interactions because the Internet and the World Wide Web are missing an important ingredient — salespeople.

We techies think, "Oh, wouldn't it be nice to live in a world without the salesdroids, blah, aren't they horrible." However, when somebody needs to buy something, whether it's 5,000 CD-ROM drives or a Toyota Camry, one expects to be able to talk to and speak with a salesperson who will be there live in front of you, for reasons of trust, commitment, a sense of having a person to help grease the gears of commerce. I don't think the World Wide Web will ever replace that person.

CW: But isn't the Web ideal for buying and selling software?

Stoll: Very little software is even available on-line. It's because nobody wants it. It's because it's much nicer to go to a store and purchase it or open a catalog and purchase it. If you go to the store, to Egghead Software or someplace, you can look and compare. You walk out with a box that you can touch and feel. Software will perform identical to that which you can download over the Internet for a fee, but hey, here I have a manual. If I buy it, I have a box. It's tangible. People want to touch.

CW: Won't the advent of digital cash spur electronic commerce?

Stoll: I don't believe it. The Internet is composed of extraordinarily cheap and parsimonious people who will go way out of their way, for example, to avoid spending 50 cents on a long-distance phone call. You've met them. I think they will be equally stingy with their digital cash.

> on digital cash spurring electronic commerce: I don't believe it. The Internet is composed of extraordinarily cheap and parsimonious people who will go way out of their way, for example, to avoid spending 50 cents on a long-distance phone call. You've met them. I think they will be equally stingy with their digital cash.

People don't trust sites on-line. If I go down the block and buy something from a merchant, I trust that when there's cash exchanged, I'm going to get the goods and I'm not going to get ripped off. On-line I'm not so sure about that. The business that's here today, it can disappear tomorrow, change its E-mail address. I may easily get burned.

That's not to say don't make World Wide Web browsers. They're fun, they're enjoyable, but they're grossly oversold.

CW: Are business's fears about Internet security realistic?

Stoll: A well-administered system does not have much to worry about. Change systems are well administered. But more and more systems on the Internet have no technical systems staff at all. They have nobody watching over them, and so, for those people, there is a significant worry.

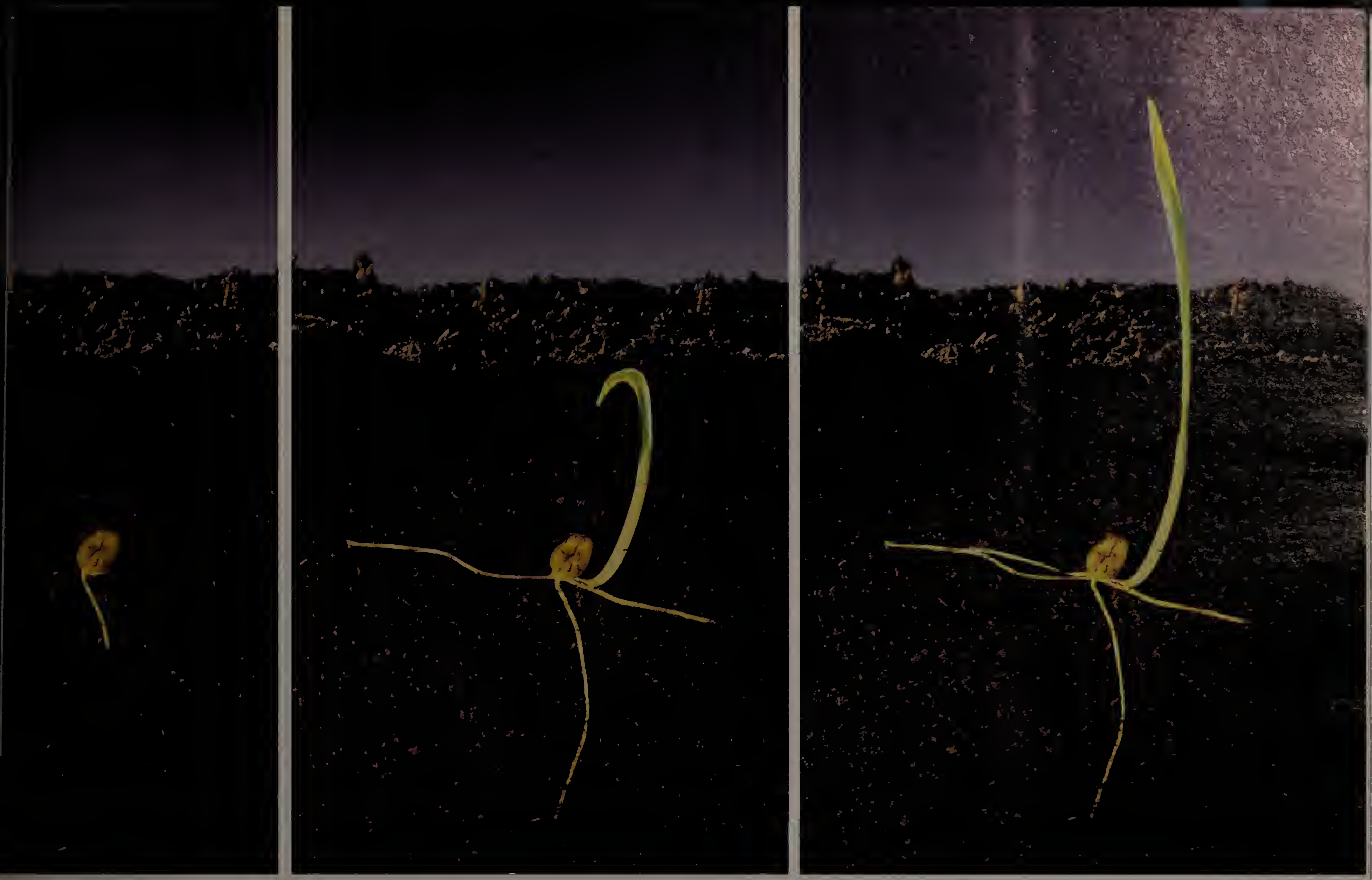
When your local-area network becomes a part of an international global network, namely the Internet, you open yourself up to all sorts of critters. I understand quite well why many companies keep their internal networks just that — internal — and have one or two or a few small computers providing a front door. But these machines are largely disconnected from the internal networks.

This, coupled with the amount of time that gets wasted by people who are on-line, tells me that many managers simply won't put their main computer systems, won't put everyone's desktop computer on the Internet. What good is it if entry-level clerks are spending their time browsing the World Wide Web? That's not what they're being paid to do. At the same time, you're opening up your corporate information structure to the outside world.

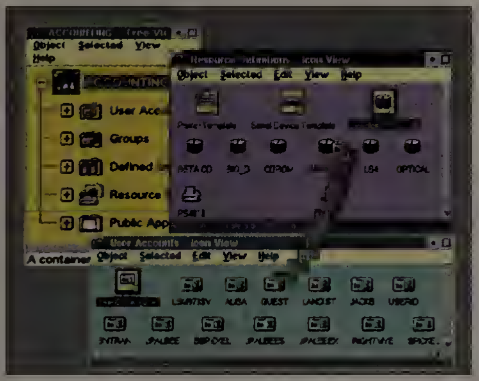
CW: Do you want to be remembered as being for or against the Internet?

Stoll: Boy, it sounds like I'm being really down on the Internet. I love the Internet. It's going to thrive, and I'm going to be a part of it. It's that in order for it to thrive, we must confront tough questions. It's not easy to admit that most of what's on the Internet is irrelevant to what I'm interested in.

In some way, the computer is a wonderful ostrich hole into which we can stick our heads and our minds — but still the world goes on. ■



Will your network grow into a majestic oak, or raging crabgrass?


ACCOUNTING - Tree View
Object Selected View Help
ACCOUNTING
User Acc
Groups
Defined
Resource
Public App
A container
Resource Definitions - Icon View
Object Selected Edit View Help
BETA CD
LS4
OPTICAL
User Accounts - Icon View
Object Selected Edit View Help
GUEST
JACKS
USERID
SPACE

"...LAN Server 4.0 sports a
modern, graphical interface that meets
the expectations of the
Windows™ generation of users."
– PC Magazine
May 30, 1995

"Departmental NOS of the Year-
LAN Server 4.0 Entry."
– LAN Magazine
April 1995

OS/2 LAN Server
IBM

Award-winning LAN Server 4.0

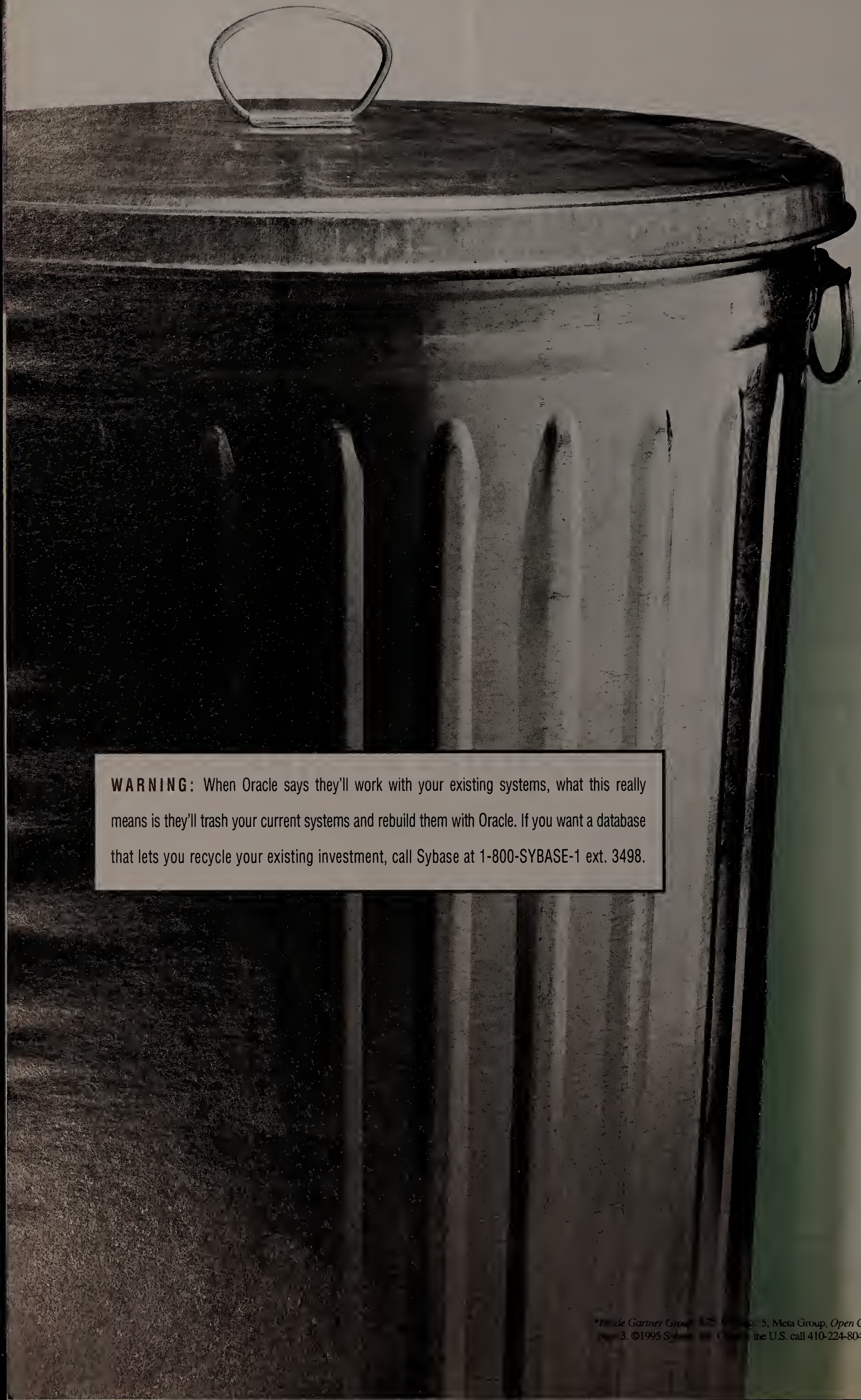
It all depends on your software. IBM® LAN Server 4.0 will actually make your network so manageable you actually look forward to dealing with it.

How did we transform a task that at best was considered a chore? For a start, we made LAN Server 4.0 much easier to install than other network operating systems. And its powerful new drag-and-drop administration makes adding new users a walk in the park.

For more information on how the new LAN Server 4.0 can help your network grow big and strong, call your local reseller or 1 800 IBM-3333, ext. GA051. In Canada, call 1 800 565-SW4U, ext. 807.

IBM®

If you would like us to fax you more information about LAN Server 4.0 directly, call 800 IBM-4FAX and request documents 1834 & 1835. Product information and demonstrations are available on the Internet at www.austin.ibm.com/pspinfo. IBM and OS/2 are registered trademarks of International Business Machines Corporation. Windows is a trademark of Microsoft Corporation. © 1995 IBM Corp. All rights reserved.



WARNING: When Oracle says they'll work with your existing systems, what this really means is they'll trash your current systems and rebuild them with Oracle. If you want a database that lets you recycle your existing investment, call Sybase at 1-800-SYBASE-1 ext. 3498.

THERE'S A SIMPLE REASON WHY *Oracle treats existing technology as disposable technology — they just can't work with your other systems as well as Sybase. Don't believe us? Believe the Gartner Group and the Meta Group. Both have recently listed Sybase as the leading vendor for client/server middleware.* Or believe the Fortune 1000, 700 of whom use Sybase to integrate their mainframes. Our complete family of interoperability products lets you leverage your current investment, instead of trash it.*

SYBASE®
The Architecture for Change™

**Inside Gartner Group* [illegible] 5; Meta Group, *Open Computing and Server Strategies*, file 407, 4-14-95, page 3. ©1995 Sybase, Inc. Outside the U.S. call 410-224-8044. Our Internet address is http://www.sybase.com/.

Attend Computerworld's New England Corporate Technical Recruiting Conference!

Monday, October 30, 1995
Boston Marriott Newton, Newton, Massachusetts

On October 30, 1995, you have a special opportunity to update your recruiting skills and network with recruiters in your area at the first-ever New England Corporate Technical Recruiting Conference, held at the Boston Marriott Newton in Newton, Massachusetts!

A FULL SCHEDULE OF CONTEMPORARY TOPICS

7:30 a.m. - 8:00 a.m.	Continental Breakfast & Conference Registration
8:15 a.m. - 9:10 a.m.	Concurrent Sessions: • The Internet: How to Start Using It Personally The Community of People You Join • Update on Diversity • Applicant Tracking
9:15 a.m. - 10:30 a.m.	How To Pick The Right People
12:15 p.m. - 2:00 p.m.	The Top 10 Trends Affecting Information Systems Careers
2:10 p.m. - 3:05 p.m.	Repeat of Concurrent Sessions
3:20 p.m. - 5:00 p.m.	Town Hall Forum
5:00 p.m.	Program ends

CONFERENCE REGISTRATION FEE*

Before September 1, 1995 *payment due by 9/15/95*	$225
September 1 - September 30, 1995 *payment due by 10/1/95*	$255
October 1 - October 30, 1995 *payment due by 10/30/95*	$295

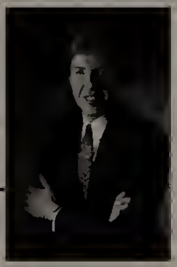
* Registration fee includes continental breakfast, lunch and the complete Conference Resource Guide.

HOW TO PICK THE RIGHT PEOPLE

9:15 a.m. - 10:30 a.m.

Dr. William Swan

Learn the latest in how to pick the right people from Dr. William Swan, a nationally recognized expert in interviewing and performance appraisal. Dr. Swan conducts interview selection seminars and workshops for major corporations and government agencies and has personally trained over 25,000 managers to conduct more effective interviews.



THE TOP 10 TRENDS AFFECTING INFORMATION SYSTEMS CAREERS

12:15-2:00 p.m.

Luncheon/Keynote Address

Paul Gillin, Executive Editor, Computerworld

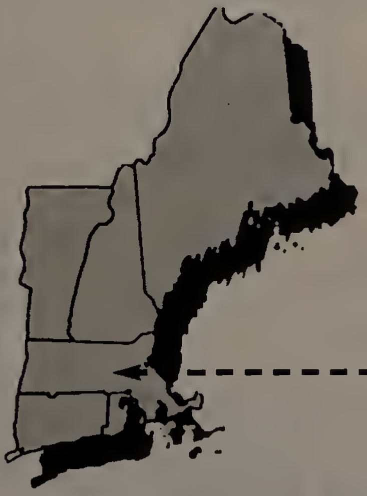
Sure, there are new skills entering the market every day, but what are the top 10 trends you should really keep an eye on? Paul Gillin, one of the country's leading watchers of the Information Systems profession will give you an up-to-the-minute view in this very special keynote address.

TOWN HALL FORUM

3:20 p.m. - 5:00 p.m.

moderated by
Jack Erdlen, Strategic Outsourcing

In this session, you'll not only be able to propose your specific questions for open discussion, you'll learn of real world issues and solutions from your peers. You won't want to miss this rare opportunity as Jack Erdlen, an expert in the HR field, leads us through this modern discussion of your recruiting topics.



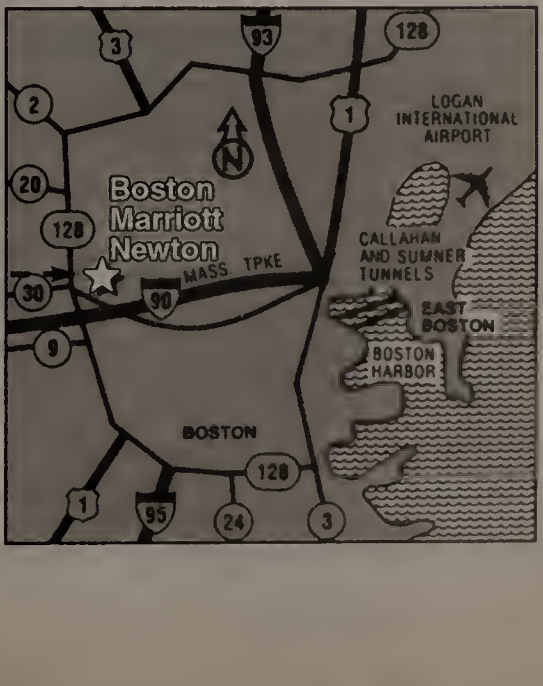
New England
CORPORATE
TECHNICAL
RECRUITING
CONFERENCE
COMPUTERWORLD

For more information, call the conference hotline:

1-800-488-9204

October 30, 1995

Boston Marriott Newton, Newton, MA



Now you have a better way to recruit university and college students planning computer careers:

Computerworld's eighth annual Campus Recruitment Edition

Issue Date: October 31, 1995
Close September 15, 1995

If you recruit top computer career students on America's campuses, your message in this special issue will target more of them than any other newspaper or magazine!

Now you can recruit computer talent on campus without leaving your office!

That's because 100,000 copies of this special issue will be distributed to America's best and brightest students enrolled in Information Systems (IS), Computer Science, Computer Engineering, Electrical Engineering, and just about any other computer-related curricula.

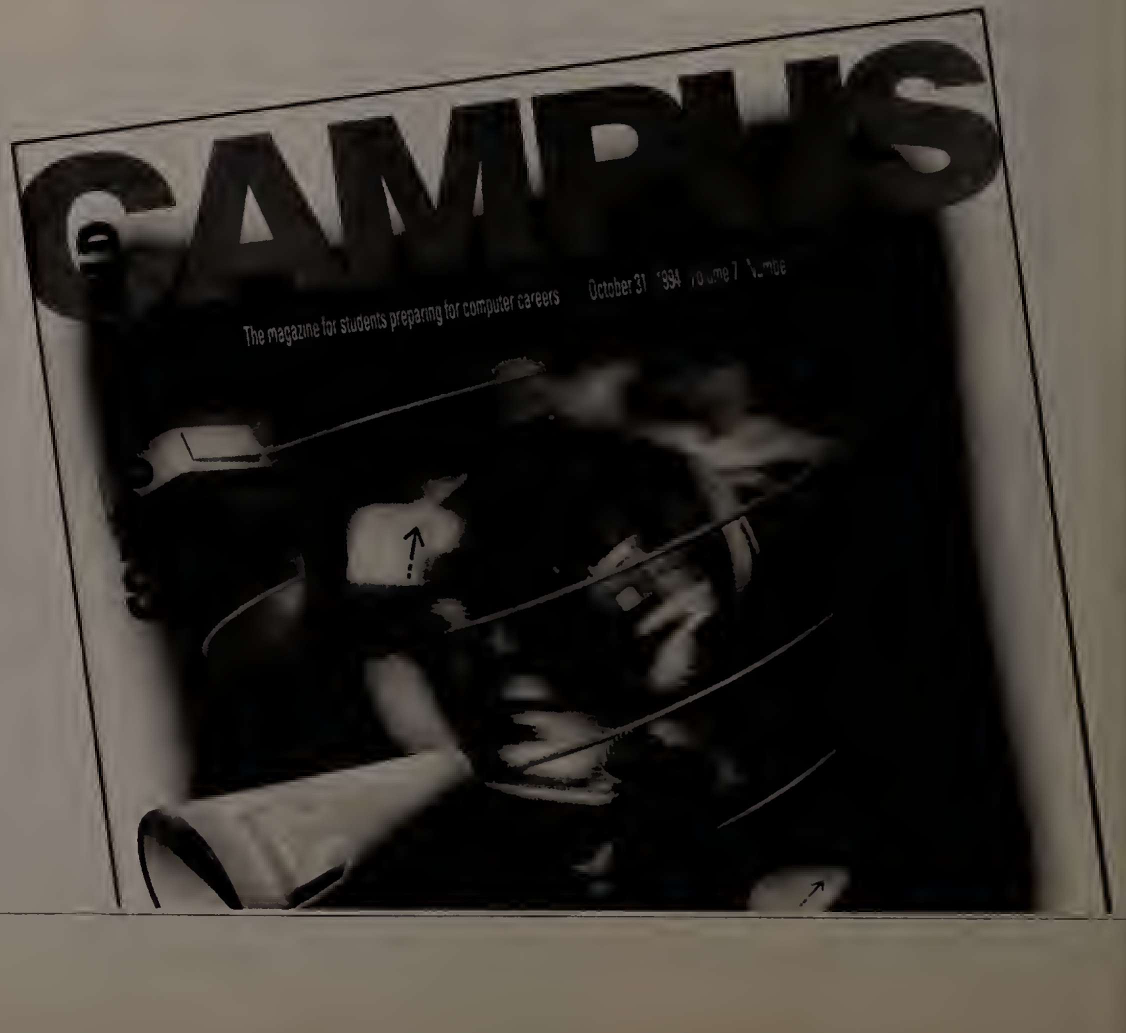
Finally you can cost-effectively reach the quality and quantity of students you need!

And you can do it with just one ad in ***Computerworld's Campus Recruitment Edition!*** For a rate card reflecting complete campus distribution, call John Corrigan at 800/343-6474 (in MA, 508/879-0700). But hurry…
This issue closes September 15, 1995.

Planned Editorial Features:
(subject to revision)

- The best places to work in IS
- Companies where computer career students want to work.
- Information Systems salaries from Computerworld's annual survey with the Association for Systems Management
- And much more!

CAMPUS RECRUITMENT EDITION
8th
ANNUAL
EIGHTH ANNUAL


CAMPUS
The magazine for students preparing for computer careers
October 31 1994 Volume 7 Number

COMPUTERWORLD

Professional Courtesy Voucher

☐ **Yes**, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of $39.95* per year - a savings of $8.05 off the basic subscription price.

First Name MI Last Name

Title

Company

Address

City State Zip

Address shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: $48 per year

* U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295.
Foreign orders must be prepaid in U.S. dollars.
For faster service, fax your order to (508) 626-2705.

SAVINGS STATEMENT

Regular Subscription Price

~~$48.00~~

Your Special Rate

$39.95

Your Savings

$8.05

E4H5-2

COMPUTERWORLD

Professional Courtesy Voucher

☐ **Yes**, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of $39.95* per year - a savings of $8.05 off the basic subscription price.

First Name MI Last Name

Title

Company

Address

City State Zip

Address shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: $48 per year

* U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295.
Foreign orders must be prepaid in U.S. dollars.
For faster service, fax your order to (508) 626-2705.

SAVINGS STATEMENT

Regular Subscription Price

~~$48.00~~

Your Special Rate

$39.95

Your Savings

$8.05

E4H5-2

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 1131 FRAMINGHAM, MA

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
CIRCULATION DEPT
375 COCHITUATE ROAD
FRAMINGHAM MA 01701-9494

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 1131 FRAMINGHAM, MA

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
CIRCULATION DEPT
375 COCHITUATE ROAD
FRAMINGHAM MA 01701-9494

Computer Careers

All the RIGHT moves

To remain sane in the midst of a daunting number of new technologies, focus on the SKILLS that will really keep you competitive

By Rouja Brzozowski

Surviving the information systems skills game is much like learning how to play tennis — at every turn there's a new technique or tool waiting to be mastered. While you'd like to learn them all, practically speaking, it's impossible. My advice is, don't even try. The key is focus.

A few years back, my tennis game needed improvement, so I bought a new racquet and went to tennis camp.

I improved my strokes, learned new ones, picked up strategy tips and discovered new equipment. I came home a happy woman, but the feeling was shortlived. A month later, my game was no better off. I was disappointed yet curious. Why hadn't the skills stuck?

As a professional who deals with skills and training, I wanted to know what went wrong. After talking with tennis friends and training colleagues, I discovered I was trying to learn too much at once. I should have chosen a few things to become good at and concentrated on them for a while before moving on. An IS professional who wants to know what to learn next can use the same technique. Consider the following questions I constantly hear in the field:

How do I know what to learn?

Tennis players have been asking similar questions for years. What kind of racquet do I play with? Which brand do I choose? What surface is best?

Good tennis players can play on any surface with any racquet. They learn to play with different people, to play indoors and outdoors. Most change racquets every couple of years. Flexibility and adaptability are critical parts of the game. In fact, the greatest honor in tennis, the Grand Slam title, involves winning four major tournaments on four different surfaces in the same year.

TIP: Learn to move easily from one platform to another. Home court is usually the best place to start. Find out what's being used in your organization and review architectural blueprints, vendor literature and industry publications. Talk to people you work with and consultants. Check out your company's training facility and see if it can make the product available to you. Try to play with two products in the same family.

What skills will I need in the future?

Good tennis players spend a lot time assessing their game. The best in the world have full-time coaches. They look at the set of skills needed to win matches. They look at strokes and at strategy, concentration, footwork, assessing opponents' games and dealing with the person on the other side of the net.

TIP: Learn to assess your total game. Look at your technical skills and your business, interpersonal and management skills. Pay attention to business functions, products and markets. Pay attention to teamwork and, in general, your interactions with others. Pay attention to written and verbal communications. Pay a lot of attention to project management tools and techniques.

How do I stay competitive?

Remember my failure to improve my game. The new racquet didn't help; neither did the tennis camp. My biggest mistakes: I tried to work on too many strokes, and I wanted to win right away.

Tennis players are almost always working on some part of their game. They analyze strengths and weaknesses. They solicit input from results (number of unforced errors, number of double faults) and from those around them. The better tennis players target specific skills and work to integrate them into the total game. They play a lot of practice matches; they do a lot of drills. They learn to use their strengths to compensate for their weaknesses.

TIP: Learn to learn and keep on learning. Expect skills gaps, but look for the two or three that will make the most difference and work on them for a stretch of time.

Get used to working on your skills and integrating them into your work — find practice opportunities. Talk with subject matter experts. Seek new environments, new equipment, new challenges and new projects. Learn to use strengths to compensate for weaknesses.

I really like tennis and want to stay with it for a long time. My game plan for the rest of this year is to work on my serve, volley and concentration.

I will arrange opportunities to learn, practice and integrate. I will solicit input and coaching. I will observe others. I will read tennis magazines. I am prepared for the frustration and eager for the joy of learning. I'll give myself a few months to improve. Then I'll start all over again. ■

Brzozowski works and plays tennis in New York. She consults on skills inventories and development for IS pros and is affiliated with the Interpersonal Technology Group in Lynbrook, N.Y.

CONSULTANTS
Immediate Interviews
MAINFRAME
OB2/CICS • EDI • ADSO
DB2 or CICS • IDMS • IMS
Natural 2 • Internals • James Martin
Tandem • AS 400 • CASE
ADW or IEF • CSP • M&D or MSA
BAL • APS • PL1
HOGAN • QMF • SAP
CLIENT SERVER
Lotus Notes • VAX/RDB • Progress
Powerbuilder • Informix • Banyan
OLE 2.0 • Novell • Paradox
Oracle • Unix • Vis Basic
Lan/Wan • Sybase • Smalltalk
Visual C++ • Access • C++
Sys/Admins • TCP/IP • Motif
PeopleSoft • Testing • Windows
Windows NT • SAP • System 10
RRA
Rohn Rogers Consulting
1212 6th Ave, 9th Fl. NYC 10036
800-421-5158 212-921-1319
Fax 212-302-4363
email: p00801@psilink.com

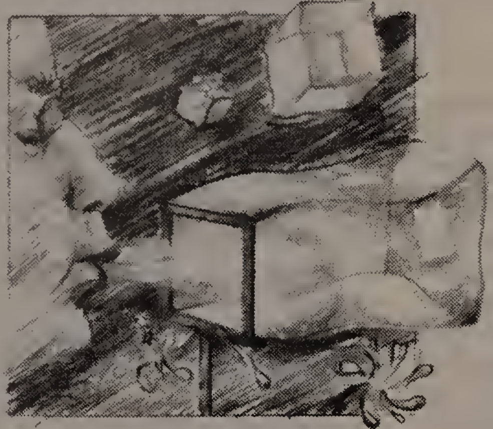
NATIONAL
Consulting and full time information technology positions in:
DB2 CSP Unix
CICS Natural Oracle
Informix Cobol IMS
Adabase PL/1 Ingres
Sybase Powerbuilder WAN
AS400 Visual C/C++ RPG
Foxpro MS Access SAP
A.C. Coy. established in 1984, offers medical insurance, vacation/holidays, life and a matching 401k plan. Reply with a resume and geographic preference to:
A.C. Coy Company
Dept. CW, PO Box 1262
Canonsburg, PA 15317
412-941-2220, FAX 412-942-9140

SPECIALIST NEEDED
Call Us.
Technology Consulting, Inc. is a dynamic and rapidly growing Software Development Firm with challenging assignments. We are a leader in application outsourcing. Current client projects and our regional development center require the following skills:
CLIENT/SERVER
C,C++, Visual Basic, Visual C++, MS/Access, Oracle, SQL*FORMS, Sybase, Powerbuilder, Windows NT, OS/2, SAP R/3, UNIX Administrator
AS/400
RPG/400
MAINFRAME
COBOL, CICS, IMS DB/DC, DB2, GENTRAN EDI, DEC/VAX, ADW
TCI offers competitive salaries, attractive benefits, and relocation assistance. For consideration, send resume or call: **502-589-3110.**
TCI TECHNOLOGY CONSULTING INC.
1800 Meidinger Tower, Louisville, KY 40202
FAX: 502-589-3107

COMPUTER CONSULTANTS
Cross The Line To A New Standard Of Consulting
MAINFRAME
•ADABAS, NATURAL (MA, CT, DC, NY)
•ADABAS-DBA
•DB2, NATURAL
•CICS, COBOL w/ Fin. Svs.
•CICS, DB2-Mult. Positions
•DB2, TELON
•IDMS, COBOL or ADSO
CLIENT SERVER
•Visual C++, UNIX or MS-DOS
•ORACLE, C++ or C, UNIX
•DBA's-SYBASE or ORACLE
•VISUAL BASIC &/or ACCESS
•POWERBUILDER
•LOTUS NOTES
•UNIX System Administrators
•LAN SERVER or NETWARE
ADD. HOT OPENINGS
•TANDEM, TAL-BANKING •AS/400, RPG-III
•PEOPLESOFT or UNIFACE •SAP-ABAP
ADEPT
The Absolute Choice In Information Technology Consulting
888 Worcester Road, Wellesley, MA 02181
Ten Post Office Sq., Boston, MA 02109
Phone: (617) 239-1700, FAX: (617) 237-0892
E-mail: recruit@adeptinc.com
Member NACCB/EOE

CONTRACTS
& Permanent Positions
$60,000 - $100,000
First Time Contractors Welcome
Programmer Analysts
IBM Midrange, Client/Server, SYNON, RPG, COBOL, UNIX
FREE TRAINING
For national opportunities send, fax or email to:
CCi
820 16th #800 Denver CO 80202
(303) 446-2484 Fax (303) 446-2483
Email: NorGate US@AOL.COM

ORIGINALITY



MAKING ALL THINGS POSSIBLE

Doing the impossible. It takes more than just a breath of fresh air. In an environment as unique and challenging as ours, it requires originality, dedication, and imagination to truly make all things possible. And that's what our business demands!

When people need help in managing today's complex work, family and personal responsibilities, we're the people they turn to. Work/Family Directions is the nation's leading provider of corporate work-life services. We've built a phenomenally successful $45-million company by delivering consultation and referral services that corporations buy as an employee benefit. Our on-demand counseling to corporate America continues to flourish through attention to detail, caring, and a company-wide "can do" attitude.

We seek a diverse workforce and offer a smoke-free environment. We are an equal opportunity employer. All trademarks belong to their respective companies.

Data Center Manager

We are seeking an individual to participate as an integral member of our IT management team. Overall management of our enterprise-wide technology resources includes the following: Management of staff, project planning and prioritization, in depth understanding of desktop/PC technology, Novell networks (Unix and TCP/IP is a plus), WANs, telecommunications strategies, equipment and protocols, design and planning of networks and architecture, capacity planning and forecasting. 10-15 years' experience in large networks is required.

Director Of Customer Service

For this newly created position we are seeking an individual who has had information technology consulting experience, Customer Support Center management, strong business analysis skills, IT training and communication skills. 10-15 years' experience in management of staff and service areas is required. Experience in Novell, Unix, Sybase and Client/Server applications a plus.

Application Programming Manager

Your management expertise is essential in this position as you ensure that application support requirements and requests are correctly prioritized, assessed, scheduled, implemented, and communicated. You will serve as the management liaison to the business units, reviewing requests for enhancements and working within the IT product planning strategy to deliver changes to current applications. Requirements include 5-10 years' technical support experience, (3 of which should be in management); and knowledge of client server or distributed processing environments. Knowledge of Sybase, Unix, Windows is a plus.

Work/Family Directions, Inc. offers competitive salaries and progressive benefits. Please send or fax resume, including salary requirements, to: Work/Family Directions, 930 Commonwealth Avenue West, Boston, MA 02215. Attention: Human Resources Dept. No phone calls, please. Fax: 617-566-2806.

WORK/FAMILY DIRECTIONS

TECHNICAL ADVISOR

Federal Reserve Automation Services (FRAS), providers of centralized mainframe support and network services for the Federal Reserve System, is seeking a Technical Advisor in **RICHMOND, VA.**

The qualified individual will participate on a development team responsible for the planning, design, and development of operating systems-level client/server and mainframe applications in support of automated operations and systems management.

The candidate must be a highly creative individual with an in-depth knowledge of client/server systems development technology in a PC/LAN environment, as well as thorough knowledge of the Windows operating system and experience with Windows-based development tools. Working knowledge of the IBM 370/390 mainframe processing environment, including experience in either IBM mainframe-based data communications (VTAM), database management systems (IMS), or MVS operating systems required. Demonstrated skills in systems design and development, including knowledge of both high- and low-level languages essential. Knowledge of Microsoft Visual Basic, WinHLLAPI, Novell, object-oriented design, OS/2, systems development methodology, network management, and automated operations concepts desirable. Experience with IBM's automated operations products (AOC/MVS and ANO/MVS) and experience with REXX coding a plus. BSCS preferred.

We offer a competitive salary and complete benefits, including relocation assistance. For confidential consideration, please send your resume to: **Betsy Garrison, FEDERAL RESERVE AUTOMATION SERVICES, Dept. CW814, P.O. Box 27622, Richmond, VA 23261. EOE M/F/D/V.**

FRAS FEDERAL RESERVE AUTOMATION SERVICES

You Know The SAP Market

We Know SAP Since 1983!

One of the most successful European SAP consulting firms is planning to establish an agency/subsidiary (or joint venture) in the US. Therefore we are looking for a...

SAP Sales Manager, Representative or Agent

Please send resume with salary history or fax 011-41-42-651782 (Switzerland) in confidence to:

SI Consulting Group AG

....more than information technology
6343 Rotkreuz, Blegistrasse 1, Switzerland

Now you have a better way to recruit university and college students planning computer careers:

Computerworld's eighth annual Campus Recruitment Edition

Issue Date: October 31, 1995
Close: September 15, 1995

[illegible] America's campuses, your message in this [illegible] target more of them than any other newspaper or magazine!

Now you can recruit computer talent on campus without leaving your office!

That's because 100,000 copies of this special issue will be distributed to America's best and brightest students enrolled in Information Systems (IS), Computer Science, Computer Engineering, Electrical Engineering, and just about any other computer-related curricula.

Finally you can cost-effectively reach the quality and quantity of students you need!

And you can do it with just one ad in ***Computerworld's Campus Recruitment Edition!*** For a rate card reflecting complete campus distribution, call John Corrigan at 800/343-6474 (in MA, 508/879-0700). But hurry…
This issue closes September 15, 1995.

8th ANNUAL
EIGHTH ANNUAL CAMPUS RECRUITMENT EDITION

Planned Editorial Features:

(subject to revision)

- The best place to work in IS
- Companies where computer career students want to work.
- Information Systems salaries from Computerworld's annual survey with the Association for Systems Management
- And much more!

Licensing skills take on IMPORTANCE

Reading the fine print on software contracts and obeying the law pays off

By Alan R. Earls

Ask the average computer user about his software licensing agreement, and you're likely to get a blank stare, or worse — a guilty smirk. Either people have no awareness of the constraints under which they are supposed to use their software, or else they're using something illegally and know it. Either way, it's a big problem.

That explains the growing interest in software licensing management skills. Few firms are looking to fill dedicated licensing management slots. But more and more companies do want someone who will take on the task as part of his job. "It isn't essential yet, but it is nice to have," admits Jeffrey Eckler, principal at EPM, an information systems placement firm in Woodstock, Vt.

For one thing, the Software Publishers Association (SPA) in Washington is pushing hard to strengthen the legal position of software firms and has established a program that provides individuals with certification in software management. What's more, new software tools make it more feasible to monitor software use on networked systems.

Indeed, one of the biggest challenges in performing licensing management tasks is "not coming across like Big Brother," admits Ed Stewart, manager of information services at Ametek Aerospace, Inc. in Wilmington, Mass. Stewart's formula for success mixes diplomacy with a knowledge of what users need and want.

"I understood the political nature of the task when I took it on as well as the importance of walking a fine line," he says. For more and more organizations, though, software licensing isn't just defensive — an attempt to avoid copyright infringement liability — but a tool for getting more cost-effective service delivery.

Problems arise

Take Alexius Bishop, deputy director of the division of budget analysis for the state of Maryland. A patchwork of past computer purchases presented him and his colleagues with a host of management dilemmas. "In my immediate department alone, there are 8088 machines on the same network with people using Windows and WordPerfect 6.1," he says. "Until now, people have bought the software they needed at the moment." Each user bought one licensed copy, and that was that.

Although no one liked the resulting software chaos, there wasn't a strong incentive to move to more unified and standardized applications. However, Bishop says thc SPA's course "made it clear the state could actually save money" by choosing concurrent licensing on future software purchases.

Of course, persuading people to change their behavior is one of the most challenging parts of software licensing management.

"If there isn't a clear economic [and legal] issue, there's no sense in rushing to control the software people are using," says Paul Shields, senior Macintosh and Unix analyst at Bell Northern Research in Richardson, Texas.

The secret to success

The keys to successful licensing management include sensitivity to people along with knowledge of licensing arrangements — a skill Shields got from taking the SPA's course.

Additionally, it is crucial to have good measurement and control tools on the network. "Make sure the vendor software and the software you use for licensing management is truly compatible," Shields says.

Surprisingly, given the potential for direct legal liability, few who do software license management report being reviewed by their company lawyers. But all agree that mastering the fine print on software packages is the top job requirement.

"You've got to know what's important when you drag the envelope out of the box," Stewart says. ■

Earls is a freelance writer in Franklin, Mass.

Make it OFFICIAL

Software license management may be a small part of someone's job, but it is an important one. The SPA estimates that 25% of software isn't properly licensed. "Since we began, we have been called in to audit more than 1,500 corporate sites — almost 200 just in 1994," says Peter Beruk, litigation manager.

Although getting corporate America to care about software piracy is a challenge, Beruk says the industry itself is convinced that changes must be made. The SPA estimates that $8 billion a year in sales are lost worldwide due to the problem, with at least $1 billion of that total occurring just in the U.S.

Because the SPA's mandate isn't merely to enforce but to educate, it offers a one-day Certified Software Manager's course to teach software management. The course includes the following:

★ **Copyright law and the consequences of license violation.**

★ **Discussion of the six main types of software usage plans: machine, individual, concurrent, network, site/enterprise, shareware and freeware.**

★ **Methods for setting up an audit process, software management plans, employee education as well as issues related to network security.**

The course, which costs $395, is offered at various locations across the U.S. For an additional fee, an independent testing organization will administer the exam. To date, more than 300 people have been certified. For more information, call (800) 388-7478.

HATCHER ASSOCIATES

Hatcher Associates, a newly-formed retail banking technical and business oriented consulting firm, is currently looking for self-motivated professionals to staff upcoming projects in the U.S., Far East, Europe, Australia/New Zealand and South America.

Ideal candidates will have 4+ years of retail banking experience with at least 2 years of business or technical experience with the following: HOGAN SYSTEMS, SYSTEMATICS, MARSHALL & ISLEY, BRANCH AUTOMATION and/or LOAN ORIGINATION.

We are offering full-time positions (salary+benefits+bonus) and Associate positions (hourly rate+optional benefits) plus expense allowance for domestic and international assignments. Send your resume with salary history referring specifically to this ad for prompt consideration. Come join the company that is setting the new standard in retail banking consulting. Send or fax your resume to:

Consultant Offer;
Hatcher Associates
7620 Stetson Avenue
Los Angeles, CA 90045
FAX: (310)215-3147
EOE

TIME
LIFE

Time-Life Customer Service Inc. *has the following positions open at our national customer service processing center in Richmond, Virginia.*

PROGRAMMER ANALYST

Responsibilities include supporting our Forecast and Reserves Systems. Individual will confer with clients and technicians on requirements, systems analysis and application planning; develop systems specifications; create, code, test and debug programs; and assist clients with daily system malfunctions.

Programming experience and knowledge of systems analysis and design required. Proficiency in Assembler, COBOL, COBOL II, and VSAM required. Experience with Excelerator II and business knowledge and understanding of finance/accounting preferred.

SYSTEMS ANALYST

Responsibilities include supporting our financial and accounting systems, including Dunn & Bradstreet software packages. Individual will confer with clients; analyze systems and procedures; formulate logical statements of business and engineering procedures; devise methods for solution; develop the architecture and coordinate the structural design of new applications or major enhancements to existing systems; develop systems specifications; and design, code, test and debug programs.

Experience using a systems development life cycle and methodology required. Proficiency in COBOL, COBOL II, VSAM, and Excelerator II required. Business knowledge and understanding of finance/accounting required. Experience with Client Server, Assembler and EDI preferred.

We offer a challenging and supportive work environment, competitive salary/benefits, and opportunity for professional growth. Please send resume and salary requirements to:

Time-Life Customer Service Inc.
Human Resources Department
1450 E. Parham Road, Richmond, VA 23228

CONTRACTORS

✦INFORMATION SYSTEMS✦

✦ AS/400, RPG DEVELOPERS
✦ SAS RESEARCH ANALYST
✦ C, UNIX, ANY RELATIONAL DBMS
✦ VISUAL BASIC, ACCESS, ODBC
✦ MVS, JCL, C PROGRAMMERS
✦ LAN ADMINISTRATOR, PC EXPERT WITH NOVELL, OS/2, WIN
✦ C, OS/2 APPLICATIONS DEVELOPER
✦ LOTUS NOTES DEVELOPERS
✦ PC SUPPORT, LAN, NOVELL
✦ ALPHA SYSTEMS MANAGER
✦ UNIX, C++, OA TESTING
✦ VISUAL BASIC/ACCESS DEVELOPER
✦ MUMPS DEVELOPERS
✦ SAS, MVS, C
✦ SAS, MVS, VMS
✦ POWERBUILDER, SYBASE
✦ ORACLE FINANCIALS DEVELOPER
✦ NOVELL/WINDOWS SUPPORT
✦ UNIX SYSTEMS ADMINISTRATOR

✦SOFTWARE ENGINEERING✦

OBJECT-ORIENTED
✦ WINDOWS '95, DNS, NIS, NFS
✦ WINDOWS '95, VISUAL C++
✦ VISUAL C++, MFC, FINANCIAL SERVICES
✦ VISUAL C++, WINDOWS NT, FIN'L SERVICES
✦ VISUAL C++, WINSOCK
✦ VISUAL C++, WIN'95, COMMS GUI
✦ VISUAL C++, IMAGING/SCANNING GUI
✦ VISUAL C++, 32-BIT MULTIMEDIA
✦ 32-BIT PORT TO OS/2
✦ OLE 2.0, VISUAL C++, CDK
✦ OLE 2.0, WIN'95, NT, GROUPWARE
✦ C, NT [MULTI-THREADING]
INTERNATIONALIZATION
✦ DOUBLE-BYTE ENABLING
✦ TECHNICAL TRANSLATORS
✦ I18N, L10N, QA ENGINEERS
QUALITY ASSURANCE
✦ MS-TEST
✦ SENIOR OBJECT-ORIENTED QA/TESTING

Winter, Wyman ✦ Contract Services
MEMBER NACCB

PLEASE CONTACT MARK REDMOND:
☎ 617-890-7007 EXT. 3016
800-890-7002 OUTSIDE MA
FAX: 617-890-4433
E-MAIL: WINTER@WORLD.STD.COM
204 SECOND AVENUE, DEPT. CW
WALTHAM, MA 02154-1126

• NO COST • NO OBLIGATION •

CAREER FAIRS

One-on-one interviews with your choice of New England's best companies!

Career Opportunities for IS/MIS, Systems, Software, Engineering & Other Technical Professionals

BOSTON TECHNICAL CAREER FAIRS

Monday, August 21: 3pm - 7pm
Sheraton Tara • 1652 Worcester Road • Framingham, MA

Tuesday, August 22: 3pm - 7pm
DoubleTree Guest Suites • 550 Winter St.• Waltham, MA

Wednesday, August 23: 3pm - 7pm
Holiday Inn Crowne Plaza • 2 Forbes Road • Woburn, MA

Please send us your resumé!

To have your resumé circulated in advance to participating companies *or* if you are unable to attend,
MAIL (to the address below)
E-MAIL: Lendmnjd@infi.net
FAX (804-490-7448)
your resumé to: Annette, Attn: 8BOT- CW

Over 50 Participating Companies Including:
• Microsoft • Sybase • GTE • Digital Equipment • Compaq Computer •
• Fidelity Investments • Liberty Mutual • Lockheed Martin • EDS • Many More! •

Visit us at http://www.cweb.com/ or http://careers.computerworld.com for additional Lendman Career Fair dates and locations.

Produced by: The Lendman Group
141 Business Park Drive • Virginia Beach, VA 23462

CONSULTING ANALYST

NCCI, Inc., the nation's largest information company serving the workers compensation industry, has an excellent opportunity available at our Boca Raton, Florida headquarters. As a Software Technology Advocate, you will perform evaluations, testing and integration of products for our state of the art development environment.

The successful candidate will have experience in analyzing requirements and researching products that best fit our 3-tier model for client/server computing. A minimum of 5 years application development and/or new technology assessment experience is required. Should be knowledgeable in:

- Object oriented design and analysis
- Languages such as C/C++, Visual Basic, Powerbuilder
- Middleware such as EDA/SQL, Openserver, Infopump
- Operating systems such as UNIX, OS/2, Windows
- Experience in Lotus Notes and SmartSuite as development environments are desired

We offer a competitive salary, superior benefits and incentive package. For consideration, forward resume to NCCI, Inc., Human Resources, Attn: R. Jade, 750 Park of Commerce Drive, Boca Raton, FL 33487, or fax to (407) 997-4114. Drug free/smoke free workplace. We regret that we can't contact all candidates, only those selected for further consideration. EOE M/F/D/V.

NCCI National Council on Compensation Insurance, Inc.

UNIX PROGRAMMERS

Lucrative one year assignment.

Publishing company converting from IBM mainframe to Unix/Oracle Systems has need for top-notch 4GL programmers to install, modify and adapt major software packages. Must be skilled in at least one 4GL in a Unix, relational database environment. Accell, Oracle, mainframe COBOL a plus.

Approximate length of assignment is one year. Bonus based on project completion date. Benefits provided.

For immediate consideration, submit your resume with salary requirements in confidence to:

Pat Crowley

CLEMENT COMMUNICATIONS, INC.
Concordville, PA 19331
Phone: 1-800-253-6368
Fax: (610) 459 4582

Software Engineer. $48K/yr. 8am-5pm; 40hr/wk. Position avlble for Software Engr to perform analysis/dsgn/dvlpmt/systms testing & implmntn of business applics of IBM AS/400. To use RPG/400, RPG III, RPG II, CL/400, SOL/400 in an AS/400 envrnmt, C prgmng lang, TCP/IP, X.25 on UNIX based envrnmt. Must have BSc in Comp Sci or Engg, Electronic & Communication or related field. Must have 4yr exp in job offd or related occupation of Systms Analyst or Progmr Analyst; exp should incl. 4yr exp working on client server based applics in AS/400 & UNIX based systms. Job opportunity in Atlanta, GA. Applicant should send 2 resumes to: GADOL, Job Order #GA 5888028, 2943 N Druid Hills Rd, Atlanta, GA 30329-3909 or the nearest Dept of Labor Field Service Office Must submit proof of legal auth to work permanently in US.

PROGRAMMER / ANALYSTS & SYSTEMS PROGRAMMERS

FOR CAROLINAS AND SOUTHEAST

Numerous opportunities exist for on-line and data base applications P/A's as well as systems programmers and DBA's. Fee Paid. Please call or send resume to:

Keith Reichle, CPC
Systems Search, Inc.
4 Pine Point Rd.
Lake Wylie, SC 29710
803/831-2129
(Local to Charlotte, NC)

Windows4GL Programmers

Leverage your experience to discover new technologies

We're Systems & Computer Technology Corporation (SCT), one of the fastest growing information systems companies in the Philadelphia area and an established leader in application-specific software and computing management services. Due to a recent acquisition, SCT has outstanding opportunities to become a part of a high-growth business unit in manufacturing and distribution systems.

We have multiple openings for experienced

OpenROAD (Windows4GL) Developers & Systems Administrators

who are looking to expand their horizons into leading-edge technologies which include:

ORACLE
MICROSOFT SQL SERVER
UNIX
WINDOWS NT

This is your opportunity to join an established company with unlimited growth potential. For IMMEDIATE attention, fax your resume to the attention of: **Chris Jordan, Dept. TCCW546, FAX: 610-648-7560. Or call: 610-648-3006. SCT, 4 Country View Rd., Malvern, PA 19355.** Equal opportunity employer m/f/d/v.

SCT

Worldwide Customer Service Database Security Administrator

Our client, a growing international computer company located west of Boston, is seeking an experienced individual to manage the security elements of its worldwide Customer Service information processes. In this highly operational role, you will develop, implement and monitor worldwide security infrastructure (servers, databases, networks), maintain compliance to security policies, perform security audits, and assist in the continuous improvement of security practices. Must have programming/database management skills and must understand network and remote access communications. Experience should include NT/SQL Server, C, Banyan Vines, modem technology, encryption and security software products. Requires excellent interpersonal, analytical and planning skills, as well as the ability to operate at both a tactical and strategic level.

Qualified candidates, please forward your resume to: Code AS-DC, JWG Confidential Reply Service, Dept. 766JY, 888 Worcester Road, Wellesley, MA 02181. Our client is an equal opportunity employer.

JWG ASSOCIATES

Confidential Reply Service

Position available for Systems Analyst with Clearwater, Florida company. Must be able to analyze, design and develop applications for customers in the healthcare industry using UNIX, C, C++, Informix SOL and 4GL. The employee must also be responsible for the development of electronic claims submission programs and billing applications using modems and serial communications under Windows using C++, and the development of Graphical User Interfaces under UNIX and Windows. Position pays an annual salary of $48,400.00 based on a 40 hour work week (8:00 a.m. to 5:00 p.m., M-F, with an hour for lunch). Position requires a Bachelors Degree with an emphasis or major in Computer Engineering and nine (9) months of experience as a Computer Programmer/Systems Analyst or academic research in computer programming or systems analysis. The position also requires five (5) months experience using C++ and Windows programming tools in the development of software applications in the healthcare industry. The five (5) months can be in addition or concurrent with the nine (9) months of experience as a Computer Programmer or Systems Analyst. Because most of our software is developed in these mediums, the employee must have a knowledge of developing database applications using Informix, 4GL, ISOL and C, as well as a knowledge of Windows Based Graphical User Interfaces and PC communications using modems and data communication protocols. The special requirements are not consecutive and could have been acquired at any time. Send resume to: Job Service of Florida, 2312 Gulf-To-Bay Blvd., P.O. Box C, Clearwater, Florida 34618-4090, Job Order No. FL-1290261.

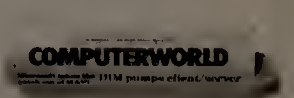
PROGRAMMER/ANALYST (2 positions).—Analyze, design, develop, maintain, code, test, and implement client's international banking application systems and subsystems; code CICS on-line programs; create test files; document changes; perform system testing, and conduct users training. ENVIRONMENT: IBM Mainframes, VAX Systems, and client/server applications. BS in Comp. Sci or Math or Engrng, or Business Admin, plus 2 yrs exp in job offered. Exp to include 2 yrs in Int'l Banking Application Systems. $48,000/yr; 40 hrs/wk; 8-5, Pompano Beach, FL. Send resume to Jobs Service of Florida, 2660 W. Oakland Park Blvd., Ft. Lauderdale, FL 33311-1347, Re: Job Order# FL-1286311.

Programmer Analyst, Charlotte, NC; Design, develop, implement, test and analyze using Borland C++ 4, OWL2.0, LAN, Windows, MS-DOS6.0, OS/2, UNIX, TCP/IP and RDBMS. Perform OOD/OOP, algorithm design and analysis, graphics user interface design and development, system modeling and simulation. Req'd. Bachelors/Equiv. in Computer Science. 6 months experience in job offered or 6 months exp in Systems Admin. 40 hrs/wk, 9am-6pm, $51,000/yr. All resumes must include the applicant's Social Security Number; and the Job Order Number NC2650673 and DOT code 030.162-014. Applicants to apply to the nearest Job Service office or to submit a resume to Job Service, 500 W. Trade Street, Charlotte, NC 28202.

Attention: Hiring Managers

When you compare costs and the people reached, *Computerworld* is the best newspaper for recruiting qualified computer professionals. Place your advertisement today!

Call toll-free
800-343-6474; ext 201
(in MA, 508-879-0700)



Sr. Technical Advisor resp. for applying structured methodologies to define complex financial applications & technical systems. Responsible for architecture of large computer systems, incl. business, data & process modelling & database design for complex OLTP systems using ORACLE RDBMS. Consults on design & devel. of corporate repository & data warehouse, specifically defining meta data architecture. Evaluate RDBMS, replication & data warehouse technologies, & database performance estimation products. Develop software development proposals, project plans & standards, incl. platform & component software. Requirements: MBA OR Masters Degree in Information Systems & 5 years exper. in Job Offered OR 5 yrs exper. in Full life-cycle software development, using structured methods & RDBMS. Must possess demonstr. expertise in the design, development & tuning of complex OLTP systems, incl. using ORACLE RDBMS, tools & CASE; dem. exp. in structured analysis & design, incl. E-R modelling, data flow diagramming, function hierarchy, & logical & physical database design; dem. exp. in management of systems devel. projects; dem. knowledge of ORACLE architecture & database admin. Salary: $72,500 per year M-F 9:00-5:00. Send resumes to: Case Number 50683, P.O. Box 8968, Boston, MA 02114. Job Location: greater Boston. EOE. Applicants must be U.S. workers eligible to accept employment in the United States on a full-time basis.

SOUTHEAST
P/A's, P/M's, DBA's, S/E's
Immediate Permanent & Contract positions paying top $$$ in Tampa, Jacksonville, Ft. Lauderdale, Orlando, Raleigh, Winston-Salem, Charlotte, Atlanta, Richmond.
SYBASE, ORACLE, PROGRESS, C++, VISUAL BASIC, POWERBUILDER, SAP R/2, R/3, ABAP/4, RPG/400, J.D. EDWARDS, LAWSON, SYNON, ADELIA, PACBASE, CICS, DB/2, ADABAS, IMS-DB/DC
ISG
1304 SW 160th Avenue
Suite S42, Sunrise, FL 33326
800/776-3190
305/389-3196 (fax)

Recruit The Best!

Place your advertisement in regional or national editions of *Computerworld's* Computer Careers section. For more information, call Lisa McGrath.

800-343-6474
x201
(in MA 508-879-0700)

Join a World Class Technology Organization in the Publishing Industry

Harcourt Brace & Company, a major International publisher, has multiple employment opportunities in the Information Technology dept. at our Orlando headquarters. All successful candidates will have a bachelor's degree in computer science or related field. Knowledge of standard PC productivity packages a must. Excellent communication, team building, and interpersonal skills required along with a proven track record of achieving high levels of client satisfaction and business results.

Application Developer

Responsible for leading, influencing and coaching developers on technology and methodology issues, Position will evaluate, recommend, and implement standards, install, configure, support and maintain application development tool set, and lead research and development efforts. Successful candidates will possess 8 years of experience in software design and development, and at least 2 years experience with client/server architecture systems. Knowledge of client/server, RDBMS, PowerBuilder, C++, COBOL, xBase, MVS/CICS and/or UNIX needed. Cross platform exposure to object oriented analysis, design, and programming preferred. PowerBuilder, with non-visual/user object design experience advantageous.

Development Analysts

Responsible for defining, designing, and implementing client/server based applications. This position is expected to be a client advocate, business professional, and technical leader on development teams. The successful candidate will assist in project management by directing all staff-level programmer efforts. Strong interpersonal and communications skills with team members, clients, vendors and users are required along with substantial experience designing, coding, testing, and implementing application systems. Qualified candidates should have an understanding of design and data management principals, and experience with the application of formal IS techniques such as ER modeling, process flowcharting, and database design. PowerBuilder, Sybase, UNIX, Windows, and Macintosh development skills and experience preferred.

Development Programmers

Responsible for developing, testing, and implementing client/server based applications. Strong interpersonal and communications skills with team members, clients, vendors, and users are required along with substantial experience coding, testing, and implementing application systems. Qualified candidates should have an understanding of data management, structured programming and/or Object Oriented programming principles. Windows or Macintosh development experience, including experience with GUI standards, client/server development and networking necessary. PowerBuilder or Macintosh programming skills and UNIX-based RDBMS servers preferred. At least one development programmer needed with significant Macintosh development experience at both visual programming and API levels preferred.

Harcourt Brace & Company offers a competitive salary and a comprehensive benefits package including health/dental insurance, 401(k) plan, and tuition reimbursement. Please send or E-Mail resume (indicating position of interest) along with salary requirements to:

Harcourt Brace & Company
Orlando, FL 32887
Attn: Human Resources, IT-SG

itadmin@harcourtbrace.com

HARCOURT
BRACE

Are you ready for a whole new world of challenge and opportunity?

The following positions in Information Systems offer you the unique perspective of working within a global environment, while being part of the decision-making process for our future technology.

Sanofi Winthrop, Inc. is a major developer and marketer of ethical pharmaceuticals. The Sanofi Research Division is dedicated to the development of innovative new therapies, and we anticipate significant future growth within the industry.

Information Systems Specialists

Document & Submission Systems – Responsible for design, development, validation, implementation and applications support of Document Management and Regulatory Submission related systems. These positions require a BS degree in Computing with a minimum of 1-4 years experience in client/server application development and experience in structured software design. Candidate should have experience with CANDA, Documentum, MS Visual Basic, C, MS Access, Oracle Development Tools, Oracle RDBMS, MS Windows, Unix and OpenVMS or similar environments.

Application Development – Responsible for the design, development and support to the Administrative and Pre-Clinical Information Management environments including working with internal and external application clients and IS staff as well as service and software vendors. Requires a BS degree in Computing with 1-3 years experience in structured software design and client/server development. Candidates should have experience with MS Visual Basic, C, MS Access, Oracle Development Tools, Oracle RDBMS, MS Windows, Unix, OpenVMS or similar environments. Experience with SQL*LIMS, Ross Financials or OPX2 a plus.

Voice/Data Communications – Responsible for managing and supporting data, LAN, and voice communications systems including troubleshooting, diagnosis and repair of voice and data communications equipment. Requires a Bachelor's degree in Electrical Engineering, with either a communications or computer concentration. Experience in management and administration of AT&T Definity Communications Systems; Ethernet based LANS; OpenVMS; Unix; MS Windows for Workgroups a plus.

Distributed Systems – Responsible for specifying and implementing solutions to integrate distributed systems and applications within the Sanofi IT infrastructure. Distributed systems comprise hardware platforms from SUN, DEC, HP running UNIX, OpenVMS, Windows NT; as well as Intel based desktop systems running MS WFW, cc:Mail; LANmanager compliant NOS; TCP/IP & SQLNET, and X.400 Mail gateways; as well as personal productivity tools such as: WordPerfect, MS Office, MS Project, MS Access, WRQ Reflections. This position requires a B.S. degree, or equivalent experience, with a minimum of 2 years of relevant experience in systems and network management in a distributed computing environment. Must have experience in a multi-vendor, multi-network environment with specific skills in PC/Windows desktop client/server application installation and support; OpenVMS and/or Unix systems management; and Windows NT. Experience with MS Visual Basic, C, MS Access, ORACLE, Documentum is a plus. Familiarity with integrating desktop tools through API, DDE or OLE a plus.

At Sanofi Winthrop, you'll enjoy a highly competitive salary and benefits package. For confidential consideration, forward your resume and salary requirements, to: **Human Resources, Dept. CW/JRC, Sanofi Winthrop, 1250 S. Collegeville Rd., P.O. Box 5000, Collegeville, PA 19426-0900.** Equal Opportunity Employer, M/F/D/V.

sanofi WINTHROP

SYSTEMS MANAGER

Spectris Technologies Inc., a small North American sales and distribution company based in Atlanta, has an immediate opening for a hands-on systems manager. We offer an excellent opportunity for a team oriented individual with strong personal drive to shape the future of our information systems. Analytical, creative problem-solving, diagnostic and interpersonal skills are required to provide support for, and maintenance of, the following:

- 80+ local, dial-in and remote(WAN)PC end-users on Novell 3.1x/4.1x/UNIX
- SouthWare distribution and accounting system
- Snap Marketing system
- CC: Mail in a world-wide environment
- EDI with European manufacturing sites and trials of product marketing on Internet
- Administration of AT&T System 75 and Octel voice mail system

Our Systems Manager must have a degree in a computer-related discipline, 5-7 years experience in systems administration in a sales/distribution environment and a strong focus on user interaction and PC support.

We offer a professional challenge and competitive salary/benefits package. Please respond with resume including salary requirements to:

SPECTRIS TECHNOLOGIES, INC.
Att: SM
2364 Park Central Blvd., Decatur, GA 30035
Equal Opportunity Employer

KCS

KCS Computer Services is a premiere system integration, training, and custom software development organization. KCS is seeking Systems and Data Architects, Analysts, Program-mers, and Communications Experts in Mainframe and Client/Server environments. In addition, KCS seeks industry experts in Banking, Healthcare, Manufacturing, and technical experts in Multimedia and MicroSoft. The following are typical skills required:

- **UNIX/OS2/NT/NOVELL**
- **ORACLE/INFORMIX/INGRES/SYBASE/SAP**
- **VISUAL BASIC/VISUAL C++ POWERBUILDER/C++**
- **C/MICROFOCUS COBOL**
- **COBOL/CICS/NATURAL**
- **IMS/DB2**

KCS has offices in Pittsburgh, Philadelphia, Atlanta, Phoenix, Cleveland, and San Francisco.

KCS Computer Services, Inc., 777 Penn Center Blvd., Suite 600, Attn: CW8, Pittsburgh, PA 15235-5906
Phone (412) 823-8632
Fax (412) 823-8821

NATURAL/ADABAS

TOP DOLLAR PAID

Natural/Adabas, Natural/DB2, and Construct programmers and analysts needed for various long term positions throughout the country. Also recruiting **MEDICAID, ORACLE, DB2,** and **VISUAL BASIC** Technicians.
Please Call:

LENCO COMPUTER CONSULTING
One Cranberry Hill
Lexington, MA 02173
(617) 674-1010
(617) 674-2001 (fax)

FLORIDA

OPPORTUNITIES FOR DP PROFESSIONALS WITH:

INFORMIX
NewEra
Consulting Partner

- IDMS/ADSO
- TPNS EXPERT
- MICROFOCUS COBOL
- COBOLII/DB2/CICS/DCS
- BORLAND & VISUAL C++
- COBOLII/MVS, IMS/DB/DC
- MS ACCESS/C++/ORACLE
- TANDEM/COBOL/SCOBOL
- ORACLE DBA'S
- IMS, DB2, IDMS DBA'S
- UNIX SYSTEM ADMIN/HP-UX
- INFORMIX DBA/4GL/ESQL/C
- PEOPLESOFT/HR/FINANCIALS
- C & C++/UNIX/MOTIF/GUI/SQL
- HP3000/COBOL/QUIZ/QUIK/MPE
- ORACLE FINANCIALS/REPORTS

FOR IMMEDIATE CONSIDERATION CALL OR FAX RESUME TODAY

Syslogic

(800) 797-5644
(813) 287-0054

P.O. Box 26146
Tampa, FL 33623

FAX
(813) 282-9511

What lies beyond the leading edge of information technology today?

The COMSYS edge. We've been unstoppable since entering the information technology arena in 1979 and our record growth has made us one of the most progressive and sought-after computer consulting organizations in the country. We provide support to a multitude of Fortune 500 clients who expect the technological expertise it takes to be better than the best.

work on the COMSYS EDGE

Work on the COMSYS edge. We're looking for accomplished software development consultants specializing in databases who seek greater challenge and the opportunity to participate in the leading edge of future technology. We have immediate positions available in the following technologies...

■ *Sybase* ■ *Oracle* ■ *DB2*
■ *IMS* ■ *INFORMIX* ■ *VERSANT*

...in all of the following regional offices as well as other locations throughout the U.S.:

- **Atlanta, GA**
  (800) 562-7882
  fax (404) 393-0367
- **Dallas, TX**
  (800) 653-7636
  fax (214) 701-0801
- **RTP, NC**
  (800) 326-6797
  fax (919) 460-1010
- **Colorado Springs, CO**
  (800) 288-2667
  fax (719) 260-0030
- **Phoenix, AZ**
  (800) 726-6797
  fax (602) 252-3090
- **Seattle, WA**
  (206) 322-7005
  fax (206) 322-7159
- **Washington, DC**
  (800) 926-6797
  fax (301) 921-3700

We offer an excellent compensation and benefits program, including health/dental, 401(k), flexible spending and more. Please send your resume to our Regional Offices for specific details! **Attn: SCWDB0814.** Or contact **Christine Bristol, National Operations** at **800-926-6797 Ext. 3652** or mail your resume to **COMSYS, P.O. Box 7947, Gaithersburg, MD 20898-7947, fax 301-921-3700. Internet:** cbristol@ix.netcom.com EOE/M/F/D/V.

COMSYS®
computer project support
"PROVIDING TECHNOLOGY THROUGH PEOPLE"

DATA TEAM MANAGER TRACK TO PARTNER

We have been exclusively retained by a successful Big-6 "Data Team" Practice serving the Great Lakes Region to identify IT professionals with proven expertise in Data Modeling at the architectural *and* tactical levels. Qualified candidates must have a consulting background in strategic, enterprise-wide Data Resource Planning (or similar approach) including entity relationship modeling, conceptual modeling, and logical/physical design stages.

Compensation for the **Manager** position is in the $100K-$120K range and presents a unique fast-track opportunity for serious partnership consideration.

Several openings also exist for accomplished **Data Architects** and **Data Analysts** in the $60K-$90K range. Extensive travel within the region required; relo to the Chicago area preferred & assistance provided.

Please respond to:

WILKINSON
*Soft*SEARCH INC.

FAX: 703/749-1426 or 1403
Internet: SoftSearch@aol.com
2010 Corporate Ridge #700
McLean, VA 22102
703/749-1421

Your skills are sharp today. *Now, let's talk about tomorrow.*

In this industry, you have to keep advancing your skills. Berger & Co. can help you do that...and give you competitive salary and benefits right now. Why work assignment to assignment when you can have a real career?

Berger & Co. is a Preferred Systems Integrator with Oracle Corporation's Business Alliance Program (BAP). This relationship enables us to offer you preferred educational opportunities, so that your skills will be as desirable tomorrow as they are today.

We have career and hourly opportunities available nationally, offering outstanding salary and benefits, including medical/dental, billing bonuses, 401k, profit sharing and educational and training opportunities.

Individuals who have skills in the following areas will be considered immediately:

- Oracle DBA
- Oracle Financials
- SQL*Forms 2.3, 3.0, 4.X
- Oracle Manufacturing

We invite you to forward your resume in strict confidence to:

Berger & Co.
Information Management Consultants

1350 17th Street, Suite 300
Denver, CO 80202
800-685-5566 • FAX 800-685-5136

CONSULTANTS

$60,000 TO $175,000

We have requirements for the following skills:

- IEF/Composer - BAA, BSI, Model Managers
- ORACLE DBA's
- DB2 Systems Programmer - Performance & Tuning - Platinum
- ORACLE CASE, SAP, Object Oriented
- Data Warehousing, Client/Server

Please call or send resume to:

LOGAN/BRITTON
3300 S. Gessner, Ste-203 • Houston, TX 77063
1-800-362-4352 • Fax (713) 266-0263

Mainframe & Cross Platform Opportunities

{Positions located throughout the country}

~R & D Manager(20 Dev's) DB2 Sybase MVS Windows Stocks+ 90k
~SW Development Manager for an MVS Performance Monitor 100k+
~Product Developer "New" DB2/MVS Performance Utility (GUI driven) Req'd: C & Bal (RACF APPC TCPIP Unix & Oracle)***Royalties+70k
~Senior Developer IMS Performance Monitor C, BAL & MVS 90k
~Sr Dev "New" Netview Monitor C/BAL MVS/Unix -CICS or LAN+ 80k
~Senior Dev MVS Performance Monitor or Sys Util C BAL/MVS 90k
~SW Dev C Rexx Clist MVS/Vtam internals (C++, Unix & OS-2+) 80k
~Senior Middleware Product Dev C/BAL IDMS or IMS MVS/UNIX 90k
~Dev in C port MVS product to AIX HP Sun Solaris RDB equity & 70k
~Customer Support IMS DBA Utility BAL SMPE-DB2+(level 1 & 2)70k
~Customer Support IMS & CICS system or prog , cobol or BAL w/JCL VSAM req'd. DB2 GUI/LAN UNIX/Oracle desired (3 companies) 65k
~Prod Marketing Mgr Storage Mgmt HW/SW. Collateral Req'd. 65k
~Prod Marketing Mgr MVS/Unix Sys Utilities. West coast territory 75k
~Technical Writer Dev SW user manuals: MVS/OS2 util's Coreldraw & Word (IPF+) or RDB Oracle/DB2 APP & DBA tools Interleaf+ 60k
~SE's (pre-post sales)MVS Unix/OS2 util's C/Cobol SMPE (CM2+) or DB2/IMS oracle/sybase MVS/Unix applic/systems/DBA product 80k
Many other positions (at all levels) exist with growth potential

Submit Resume to Tina Costa of Mason Concepts, Inc

MASON CONCEPTS
6380 Wilshire Blvd., Suite 1000
Los Angeles, Ca 90048
213-655-7555 Fax 213-658-1547
Out of California 800-935-1555 masoncon@netcom.com

CONSULTANTS NEEDED

CCC is a provider of software services to business and government. Immediate salaried and hourly openings in Dallas, Atlanta, St Louis, Charlotte, and Los Alamos, NM. All technical disciplines including software professionals with:

- VISUAL C++ MFC
- C++ (UNIX, OS/2)
- UNIX System Admin.
- ADW design/construct
- ORACLE / SYBASE
- SMALLTALK
- POWERBUILDER
- X-WINDOWS

Mail resume with salary requirements and location preference (fax 214-234-2068) or call:

Comprehensive Computer Consulting, Inc.
2350 Lakeside Boulevard - 214-234-2067
Suite 120 - Richardson, Texas 75082

Computerworld makes your positions known.

When you have positions to fill - and you want to tell the nation's top talent about them - *Computer world* is your best choice.

That's because *Computerworld* places your message in front of over one half million qualified computer professionals every week. And you can choose to deliver your recruitment message regionally and nationally.

To place your advertisement, call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700), ext. 201.

COMPUTERWORLD
IBM pumps client/server

Weekly. Regional. National.
And it works.

COMPUTER: Sr. Systems Engr. - Designs, codes, tests, documents & implements client/server application suits for AS/400 & PC through LAN/WAN & other telecommunications media using CL, RPG, Visual Basic & C, C++ languages; dvlps bus. applications using object-oriented & systems dvlpmt methodologies; consults w/users to identify systems needs & reqmts.; reviews, analyzes & dvlps external & tech'l bridge systems specifications; dvlps & executes unit & systems test-plans, provides documentation for systems dvlpmnt. & implementation. Reqs: M.S. or foreign degree equiv. in C.S. or Computer Info. Systems or related & 2 yrs exp. in job offered or in programming/analysis or related capacity or equivalent. Experience must incl. systems dvlpmnt. for client/server applications using AS/400; RPG, CL, Visual Basic, C++; telecommunications programming on LAN/WAN; MS Windows SDK, VBX & DLL Windows dvlpmnt. tools. Must possess theoretical & practical understanding of object oriented methodology & systems dvlpmnt info. engineering methodology. Must be elig. for gaming card issued by State of NV. 40 hrs/wk; $43,500/yr. Job site: Reno, NV. Send this ad & your resume to Job #9525192, Nevada Employment Security Division, 70 W. Taylor St., Reno, NV 89509-1700. If offered employment, must have legal right to work in US. EQE.

Software Engineer to develop MIS including design of various modules (membership, accounting, advertisement, etc); analyze information obtained from users to design system; develop functional model of system; design database using Oracle 7.0, Oracle Case Dictionary; develop database packages & procedures using PL/SQL; design module & generate forms using Case Generator for master screens & transactions & use SQL*Forms for further development; develop reports using SQL*ReportWriter & perform unit & integration testing; Reqs. Master's in Comp. Sci., Computer, Electrical or Electronics Engg., Comp. Applications or its equiv., 6 mos exp in job offered or 6 mos related exp as Trainee, Programmer, Programmer Analyst, Systems Analyst or Software Engineer. Related exp. must include developing systems using Oracle 7.0, Oracle*Case tools, SQL*Forms & PowerBuilder 3.0; $43,000/yr, 40 hrs/wk 8a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #144395 "Employer Paid Ad"

PROGRAMMER ANALYST: (2 positions) 40 hrs./wk., 8am-5pm, $46,000/yr. Carry out the analysis of program specifications, program design, coding & testing of application systems under UNIX environment utilizing ORACLE database and "C" language. Reqr. Bachelor's degree in Computer Science or Electronics Engineering and 2 yrs. expr. in job offered or 2 yrs. expr. as Systems Analyst and/or Software Engineer. Reqr. work experience in development of software application systems under UNIX environment utilizing ORACLE and "C". "Employer paid ad". E.Q.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No: 118595.

PACIFIC NORTHWEST

Career Opportunities

(Fulltime Placement, Employer Paid Fee & Relocation)

PA's Cobol, IMS or DB2	$35-45K
Tandem Base24, TAL, Sr. PA.	$65K
Burroughs/Banking IS Mgr.	$45K
Data& Process Analysts/Modelers ER's, DFD's, Data, Process and Enterprise. Data Warehousing/Repository.	$50-75K
NT Sr. System Admstr/Sys Pgmr	$60K
Oracle PA's	$45-55K
Sr. PA's DB2 or DB2/CSP	$50K
Hogan Sr PA or SA	$65K
IBM 4680 POS Sr. PA	$53K
AS/400 PA's & SA's RPGiii Synon or JD Edwards a plus	$35-55K
Systems Engineer (Vendor) Wireless communication, Unix, AIN Tech/Architectural Expertise and Motorola Systems	$70-90K
POWERBUILDER Developers	$50-60K

Fax Resumes
Attn: Computerworld Ad
(206) 453-8726

HOUSER, MARTIN, MORRIS
Bellevue, WA • Ph (206) 453-2700

Systems Analyst needed for computer consulting firm located in Rosemont, Illinois. Job duties include: analysis, design, and coding of computerized solutions to solve business problems using various computer packages on a variety of hardware and operating systems environments. Will be responsible for interacting with businesses, users, and technical support groups to analyze requirements and prepare specifications for systems design. Will also interact with end users to resolve any problems or satisfy any unique needs, Will also be involved in the consolidation and conversion of existing business systems to DB2 base systems. Will use MVS, COBOL II, DB2, SQL, Micro Focus Workbench, TSO/ISPF, JCL, QMF, and VSAM. Applicant must have 3 yrs. exp. in job duties described above or 3 yrs. exp. as a Programmer or Systems Analyst using COBOL II, DB2, SQL, JCL, QMF, TSO/ISPF, MVS, and VSAM. $38,100 per yr., Mon-Fri, 9 am-5 pm, 40 hrs. per wk. Must have legal authority to work permanently in the U.S. Send resume in duplicate (no calls) to: Brenda Kelly, Ref. #V-IL 13317-K, Illinois Dept. of Employment Security, 401 S. State St. - 3 South, Chicago, IL 60605. AN EMPLOYER PAID AD.

The weather is not the only hot thing in St. Louis! So is the Job Market

Multiple Contract & Perm positions available:
- Strong Mainframe Professionls
- Cleint/Server Developers & Analysts
- Business Analysts
- Bull 9000
- Natural/Adabase

JMR Associates, Inc

9417 Lackland Rd.
Overland, MO 63114
(314) 429-ROSS
FAX 429-7600

You Know Kodak.

Or Do You?

Historic developments are taking place at **Kodak**. The most powerful names in the communications and computer industries are forming key alliances with us to access our innovations in digital imaging. ■ Alliances with **Microsoft**, **HEWLETT PACKARD**, **SEGA**, **Sprint**, **IBM**, and **WANG** are just the beginning. Explosive growth in the home office computer market and continued expansion of business networks around the globe have created an unparalleled demand for our digital imaging technology. ■ It has also created a demand for professionals who want to get in on the ground floor of these new, entrepreneurial enterprises.

Kodak digital science

© 1995 Eastman Kodak Company

Software Engineers, Software Quality Engineers

Opportunities are available in the following product areas: Photo CD; Large Volume Optical Disk Storage Systems; PostScript Printer Software Development/RIPS; Photofinishing and Photographic Equipment.

These positions require a BS (or equivalent); 3-5 years product development experience with C/C++; Object Oriented; GUI (Motif); UNIX/Mac/MS Windows/Windows NT; Windows 95; OS2; Real Time Machine Control Applications; Test Engineering and SW Quality Processes; and Database Design/Development (FoxPro, Sybase).

In addition to a stimulating technical environment, you will enjoy our location in Rochester, New York. Affordable housing, high caliber schools, diverse cultural and recreational activities, and the beauty of the Finger Lakes Region all contribute to an enviable lifestyle.

Kodak offers competitive compensation, a liberal benefits package and relocation assistance. Qualified candidates are invited to forward resumes to: **Eastman Kodak Company, Attn: Professional Staffing, Dept BDAICWN33, 343 State Street, Rochester, NY 14650-1139. FAX: (716) 724-9416.** Eastman Kodak Company is an equal opportunity employer. We invite people with disabilities to notify us of their need for accommodation. NO PHONE CALLS, PLEASE.

★ GET OUT ★ OF TOWN

NATIONWIDE OPPORTUNITIES

YOUR HOME TOWN MAY HAVE MANY JOBS, BUT NOT YOUR CAREER OPPORTUNITY. THE COMPUTER-TECH NETWORK OF 160 NATIONAL COMPUTER SEARCH AGENCIES SPECIALIZES IN THE NO CHARGE PLACEMENT AND EMPLOYER PAID RELOCATION OF COMPUTER PERSONNEL TO ALL AREAS OF THE U.S.A. & OVERSEAS.
TOLL FREE 1-800-752-3674
FAX (216) 356-9991

COMPUTER TECH NETWORK

21010 Center Ridge Rd.
Rocky River, Ohio 44116

CONSULTANTS

- All Technologies
- Nationwide Openings
- Salaried or Project Basis
- 2+ Years Experience

Send/Fax resume to:
Analysts International Corp.
P.O. Box 39612
Minneapolis, MN 55439
Fax (612) 897-4693

CLIENT SERVER MANAGER

We have been retained to conduct two Senior level searches for positions in the Baltimore area. Experience should include an emphasis in Client Server Architecture or Systems Development. Positions offer very attractive compensation and benefit plans. Relocation provided. Please forward resume & salary requirements to Abacus Consultants, Inc., 1777 So. Harrison St., Ste. 404, Denver, CO 80210, Attn: SJK.

Fax: (303) 759-9846 or
E:mail Abacons@AOL.COM

TANDEM

COBOL, PATHWAY,TAL, SCOBOL,C, SQL,X.25

STRATUS

PL1,COBOL,C,ON/2

MUMPS UNIX

SUN, HP, RS/6000, GUI, SDK Powerbuilder, C++, Visual Basic
Fulltime/Consulting Positions available in the US/ABROAD

STRATEM

800-582-JOBS
TEL (212)967-2910
FAX (212)967-4205
124 W. 30th St. Suite #302
New York, N.Y.10001

CONSULTANTS SHOULD CONSULT

MIMI

IMMEDIATE CONTRACTS

Please send resume & call

Mimi Simon Assoc.
90 West St., Suite 1105, NYC 10006
(212) 406-1705
FAX (212) 406-1768

ATTENTION CONTRACTORS!

Add your resume to the Jupiter Database and let all the consulting companies that are looking for your skillset come to you. Assignments/Positions are available nationwide for absolutely all skillsets. The Jupiter System, an on-line database of IS professionals that are available for contract and/or permanent positions, can give you the added advantage in finding that perfect assignment or job. **And it costs you nothing!** If you want that added advantage, mail or fax your resume to:

The Jupiter System

P.O. Box 37075 — FAX (800) 505-6293
Kansas City, Mo. 64138 — VOICE (800) 222-0751

Assignments Contract W2 • Contract 1099 • Contract for Hire • Permanent Placement

Positions Applications Programmers • Database Administrators • Lan Administrators • Programmer/Analysts • Systems Analysts • Systems Programmers • Team/Project Leaders • Technical Writers

PORTLAND, OR
PROGRAMMER/ANALYSTS

Join Computer People Inc. You'll be impressed by our commitment to fostering permanent, career-enriching opportunities that incorporate your goals and encourage your advancement. We believe the success of our $250 million international systems consulting firm is founded on the long-term accomplishments of our people.

Currently, we have exceptional opportunities in Portland, OR for experienced Information Systems Professionals with demonstrated expertise in any of the following areas:

- **IBM Mainframe w/ database and on-line skills**
- **Client/server technology including Microsoft Tool Set**

Our progressive organization provides competitive salaries and comprehensive benefits. Hourly positions with or without benefits are also available. You'll also enjoy decisive career challenge in a cutting-edge technical setting. Please call us today (503) 224-6070 or (800) 274-2707. Fax to (503) 223-1294, 707 SW Washington St., Suite 510, Portland, OR 97205. E-mail to: RECRUITING@CPEOPLE.COM An Equal Opportunity Employer AA/EEO.

Computer People
Making Technology Work

Microsoft
SOLUTION PROVIDER

HARDWARE/SOFTWARE VENDORS

Salaries to $100,000

Outsource Manager - Client seeks managers with experience directing an outsourced programming group.
Product Development Manager - Requires product development management in a UNIX or WINDOWS or OS/2 arena.
OS Reliability, Availability Mgr. - Manage group directing RAS features for PC Operating Systems for a PC manufacturer.
Mainframe Developer - Requires S+ yrs IBM ALC, DB2 and MVS.
Compiler Developer - Will be part of a team specifying PC level compilers. Must have compiler development exp.
QA - Multiple positions requiring strong hardware or software QA exp.
Firmware Mgr. - Will manage firmware development for a PC manufacturer.
Development Programmers - Multiple openings with clients around the country developing desktop and mainframe software products. Typical skills required include C, C++, Smalltalk, PowerBuilder, IBM assembly.

APPLICATION DEVELOPMENT POSITIONS

Salaries to $75,000

DBA - 1+ year Oracle, DB2, IDMS, ADABAS, SYBASE or INGRESS.
System Prog. - 3+yrs MVS, DB2, IMS, VSE/VM or VTAM.
P/A - Any combination of CICS, DB2, IDMS, ADABAS or Oracle.
AS/400 P/A - RPG or Cobol. SYNON a plus.
EDP Auditors - Degree, CISA or CPA a plus.
Life Insurance - PC or Mainframe exp. P/A and Proj Managers.
Mfg. Software Engineer - 2+ years mfg. Cobol, C. Smalltalk a plus.

ROBERT SHIELDS & ASSOCIATES
PO Box 890723 • Houston, TX 77289-0723
713/488-7961 • Fax 713/486-1496 • email: ITJOBS@AOL.COM

SOFTWARE ENGINEER: (2 positions) 40 hrs./wk. 8 a.m. - 5 p.m., $47,500.00/yr. Carry out systems analysis, systems design, coding and testing of s/w application systems under a UNIX environment utilizing ORACLE & Pro*C. Requires bachelor's degree in Computer Science or Electrical or Electronics Engineering. Reqr. 4 yrs. expr. in job offered, or 4 yrs. expr. in Systems Analysis &/or Programming &/or Software Engineering &/or Computer Consulting. Reqr. work expr. in development of s/w systems under UNIX environment utilizing ORACLE & Pro*C. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref No.: 141695

Computer Instructor

Verhoef Information Packages, Inc., a leader in computer education, is seeking an instructor with expertise in the following areas:

UNIX, "C" Language, and C++

The successful candidate will have experience and the ability to continue learning new technologies. Teaching experience is necessary, and the candidate should be prepared to teach throughout the United States and Canada. Please contact Verhoef Information Packages at:

1-800-631-0410.

SOFTWARE ENGINEER: (2 positions) 40 hrs./wk., 8am-5pm, $44,000/yr. Carry out the system analysis, system design, coding and testing of software application systems under IBM mainframe environment using DB2, CICS and COBOL. Require Bachelor's degree in Computer Science or Electrical Engineering and 3 yrs. expr. in job offered or 3 yrs expr. as Programmer and/or Systems Analyst. Reqr. work experience in design of software application systems and with IBM mainframes, DB2, CICS, and COBOL. "Employer paid ad". E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No: 141595.

PSC

JOIN US AT THE TOP!

We have immediate openings in Phoenix & Denver for people with the following skills:

- IMS, DB2
- CICS W/DB2 OR DL/1
- COBOL, C OR C++ W/UNIX
- DATA ANALYST
- IMS OR DB2 DBA
- ADABAS/NATURAL
- VISUAL BASIC W/ANY SQL
- POWERBUILDER W/ANY SQL
- GUPTA
- IEF S.2, 5.3
- COBOL, COBOL II, COBOL/370
- AIX/RS6000 W/C OR C++
- SYBASE
- C, C++/WINDOWS NT (developer or Network Administrator)
- RPG400 AND/OR C400
- BUSINESS ANALYSTS W/MS OFFICE SUITES
- MSA
- SAS
- TUXEDO, C/C++, HP SOFTBENCH
- MAC/OMNIS
- DATA CONVERSION
- Data Base Designer w/Sybase and Oracle
- Sybase or Oracle DBA
- C or C++ Tester

Call or fax resume to:
Professional Software Consultants, Inc.
Laurie Zinker
4747 N. 7th St., Ste 424
Phoenix, AZ 85014
(602) 279-4498 or
1-800-279-4498
Fax (602) 279-1161
Member NACCB

Looking for qualified computer professionals?

More than over one half million computer professionals read *Computerworld* every week. And you can reach all of them – or just the ones in your region – with a regional or national recruitment advertisement in *Computerworld's* Computer Careers section. **For more information, call Lisa McGrath at 800-343-6474, x 201 (in MA, 508-879-0700); or call your local sales office listed below:**

Look no further

COMPUTERWORLD

BOSTON
Nancy Percival
375 Cochituate Road, Box 9171,
Framingham, MA 01701-9171, 508-879-0700

NEW YORK
Marty Finn
Mack Center 1, 365 West Passaic St.,
Rochelle Park, NJ 07662, 201-587-0090

WASHINGTON, D.C.
Katie Kress
8304 Professional Hill Drive,
Fairfax, VA 22031, 703-573-4115

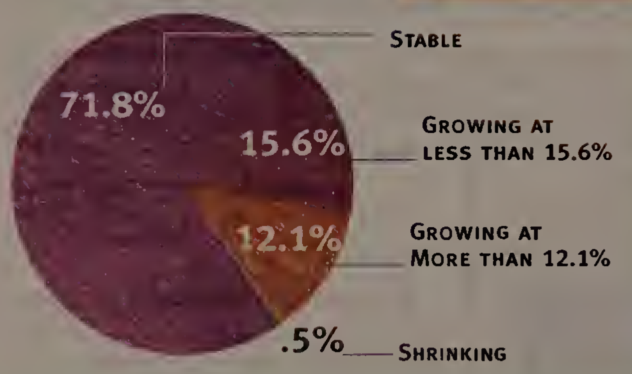
CHICAGO
Patricia Powers
1011 E Touhy, Suite 550,
Des Plaines, IL 60018, 708-827-4433

LOS ANGELES
Barbara Murphy
2171 Campus Drive, Suite 100,
Irvine, CA, 92715, 714-250-0164

CAREER SURVEY: Computer Software

INDUSTRY HIRING TRENDS

OVERALL GROWTH RATE **10.5%**

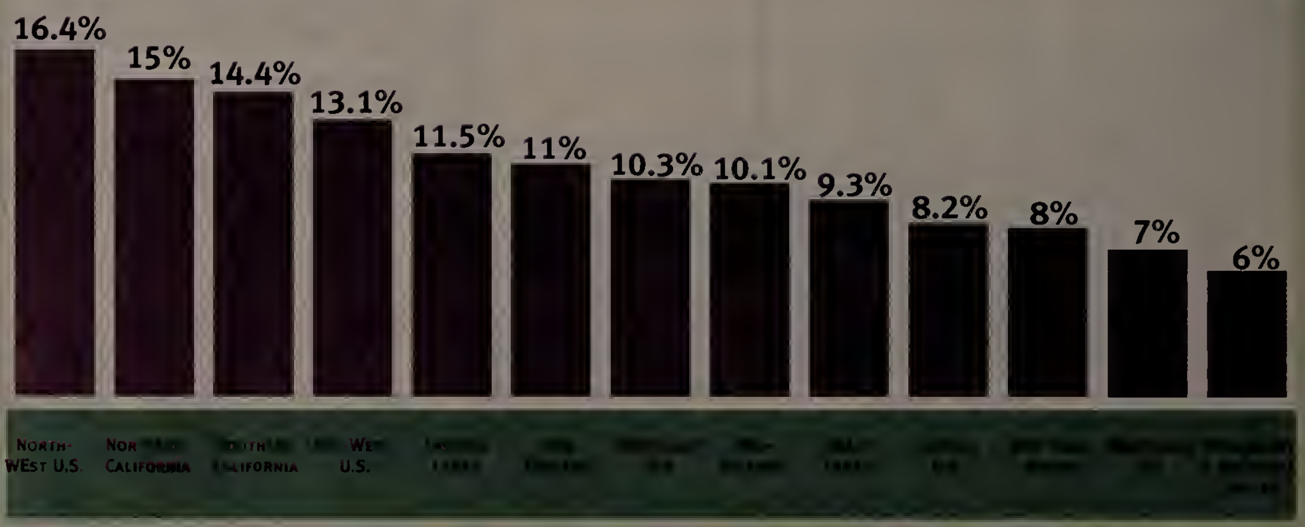


Survey base: 7,102 technology firms involved in Computer Software

Survey conducted between May '95 and June '95;

© Copyright 1995, Corporate Technology Information Services, Inc., Woburn, Mass

REGIONAL GROWTH ANALYSIS



CorpTech, a directory publisher in Woburn, Mass., tracks the U.S. 35,000 technology manufacturers. This survey relates to the 29,383 tracked firms with fewer than 1,000 employees.

Systems Analyst. Analyze user requirements, procedures, and problems to automate processing or to improve existing computer system primarily within financial departments of business organizations. Develop appropriate client financial business systems software applications to address business needs. Confer with business clients to analyze current operational procedures, identify problems and learn specific input and output requirements. Write detailed description of user needs, program functions and steps required to develop or modify computer programs. Design systems to address client's needs utilizing the following computer based methodologies: IBM 3090, IBM370, Wang VS80, IBM PC/XT/AT, CICS, DB2, VSAM, Spufi, Intertest, Expediter, MVS/ESA, QMF, VS COBOL II, ICCF, Clipper, Basic, Dbase. Wang-VS, VSAM, Excelerator as a Case Tool TSO and ISPF. Write description of steps taken to modify system and procedures required to implement new software. Train and assist users having problems with use of system software. Requirements: Bachelor's degree in Computer Science or Engineering plus two years experience as a Systems Analyst or Computer Programmer. Related experience must include two years developing financial business systems software applications using the following hardware/software: IBM PC/XT/AT, IBM 3090, CICS, Clipper, VS COBOL II, DB2, Intertest, Spufi, ICCF, DOS/VSE, TSO, ISPF, MS/DOS, QMF, Unix, VSAM. 40 Hr./Wk. 8:30 a.m. to 5:00p.m. $40,000/year. Must have proof of legal authority to work permanently in the U.S. Send two copies of resume to Illinois Department of Employment Security, 401 S. State Street, 3 South, Chicago, Illinois 60605, Attn. Shella Lindsey. Ref. V-IL-13052-L. No calls. An employer paid ad.

Michael Gray
& ASSOCIATES

MGA Consulting, a national firm based in Clearwater, Florida has immediate FULL-TIME/CONTRACT openings in the following areas:

IEF • PEOPLESOFT
IDMS • SAP
PLATINUM SOFTWARE
TPF/CRS • ADABAS
POWERBUILDER • PL/M • RMX
ORACLE • DB2 • INFORMIX
VISUAL C++ • VISUAL BASIC
UNIX • C
CICS • IMS DB/DC
AS400 • COBOL

Excellent salary, benefits, relocation.

FAX resume to
813-724-8039
or call **800-642-4729**

To stay ahead of the curve, we offer the only solution... the advantage of experience.

Recognized as one of the most successful software services companies in the U.S., Keane, Inc. has increased its sales by more than 250% since 1992. With $350 million in revenues, a client base of Fortune 1000 companies, and a professional staff of 4,500 technical and business professionals, Keane can offer your career the advantage of experience.

At Keane, our only business is IT Services Outsourcing and Software Development. We build, re-engineer, maintain and enhance our clients' most critical business systems. Our clients have learned to depend on Keane to deliver quality results, on time and within budget. With our focus on customer service and software methodologies, it's not surprising that more than 90% of Keane's business is generated from repeat customers. Additionally, since our inception in 1965, Keane has enjoyed superior and consistent financial results. This level of excellence has been recognized by publications such as *Business Week, Forbes* and *The Boston Globe* which have named Keane one of the best managed companies in America.

If you want to be a part of a dynamic, solutions-oriented, company where superior performance is recognized and rewarded, then send your resume to Keane. We are looking for key professionals to help with our tremendous growth in the following roles:

- **Sales Representatives**
- **Consulting Managers**
- **Project Managers**
- **Sr. Technical Recruiters**
- **Branch Managers**

The Advantage of Experience

Keane's extensive Training & Development programs, attractive compensation, comprehensive benefits and commitment to excellence make Keane the Employer of Choice for our "best-of-breed" employees. Please send or fax your resume to:

Dan Anhalt, Area Manager
Keane, Inc.
400 North Executive Dr., Suite 314
Milwaukee, WI 53005
Phone: (414) 797-4980 Fax: (414) 797-4998
An Equal Opportunity Employer, M/F/D/V.
THE SOFTWARE DEVELOPER OF CHOICE

KEANE

Information Services Division
Albany, NY
Atlanta, GA
Bedford, NH
Binghamton, NY
Boca Raton, FL
Boston, MA
Charlotte, NC
Chicago, IL
Cincinnati, OH
Clark, NJ
Cleveland, OH
Columbia, MD
Columbus, OH
Dallas, TX
Darien, CT
Denver, CO
Detroit, MI
Fishkill, NY
Houston, TX
Los Angeles, CA
Louisville, KY
Milwaukee, WI
Minneapolis, MN
Montréal, Québec
New York, NY
North Haven, CT
Philadelphia, PA
Phoenix, AZ
Raleigh-Durham, NC
Rochester, MN
Rochester, NY
Rockville, MD
San Jose, CA
Seattle, WA
Sainte-Foy, Québec
Syracuse, NY
Tampa, FL
Toronto, Ontario
Winston-Salem, NC
Woodbury, NY

Healthcare Services Division
Hunt Valley, MD
Los Angeles, CA
Melville, NY

Corporate Headquarters
Boston, MA
(617) 241-9200

MCMS
Micron Custom Manufacturing Services, Inc.

Come join the world-class team of Micron Custom Manufacturing Services where you will live in the beautiful Boise, Idaho area.

SYSTEMS ANALYST

RESPONSIBILITIES INCLUDE:

- Apply knowledge of business functions/systems technology to formulate, develop, and implement automated solutions on an ORACLE (V7) platform.
- Perform all aspects of applications systems analysis, test planning, conversion planning, and implementation activities.

REQUIREMENTS INCLUDE:

- BS in Computer Science or equivalent experience required.
- 5+ years in business/systems analysis with strong emphasis on process improvement.
- Minimum 3-5 years experience leading medium to large-scale projects within an ORACLE arena.
- Working familiarity of MS Windows, CASE, VAX VMS, and Visual Basic a plus.

We offer competitive compensation and benefits. Relocation assistance is available. For immediate consideration, please fax your resume to 208-368-2789 or mail to

Micron Custom Manufacturing Services, Inc.
8455 Westpark Street
Boise, Idaho 83704-8366

Please include salary requirements. Principals only. EEO/AA

CLARION PROGRAMMER FRANKFURT, GERMANY

An experienced TopSpeed *Clarion* programmer is needed to support the worldwide operations of the Army Recreation Machine Program and to help it move into new operating environments. This civilian position also entails user instruction and support, so demands strong written and verbal communication skills.

Requirements include a four-year degree in a computer-related area, two years' professional experience designing and producing database programs for personal computers involving the use of *Clarion* products, prefer some experience with *Clarion 3.1* and/or *Clarion for Windows*. Also required is the demonstrable ability to produce appropriately targeted written user instructions as well as explicit technical documentation. Professional experience in presentation and/or training highly desirable.

The computing environment includes hand-held, pen-based data collectors; stand-alone and networked PC's; local and wide-area data communications, and AS/400. Experience in these areas, other programming languages, or *Windows* programming is a plus.

In addition to a dynamic work environment, the position offers a salary of at least $34,295, a tax-free housing allowance (currently over $22,000), paid relocation costs, and an excellent benefit and leave package. There is a three-year, renewable contract.

Resume including salary history must be received by September 8, 1995. Send to:

US Army Community and Family Support Center,
Attn: CFSC-HRP-S (Mr. Lacy Saunders) Hoffman Bldg 1,
Room 1222, 2461 Eisenhower Ave., Alexandria, VA 22331-0523.

TECHNOLOGY KEEPS CHANGING.

INTEGRATION
SOLUTIONS NETWORKING
PERSPECTIVE
TECHNOLOGIES
APPLICATIONS
MIGRATION
SYSTEMS

OUR FOCUS REMAINS CONSTANT.

Change is constant in the information age. And that's good. Change can hreed a whole new level of opportunity -- for our company, our customers and our people -- when we focus on achieving new levels of success.

The merger of Martin Marietta and Lockheed was the first step. As a result, the Management and Data Systems (M&DS) group of Lockheed Martin is better equipped and positioned to respond to the changing dynamics of information technology and the needs of our customers. Now we are aggressively expanding existing programs and winning new contracts to sustain our impressive growth record.

This is your chance to join us. The potential is exciting. The programs are already in place. And the challenges -- supporting vital legacy systems, migrating to more powerful, flexible environments, applying new technologies in innovative, cost-effective ways for government and Fortune 50 clients -- are here.

LARGE SCALE DATA SYSTEMS
Philadelphia, PA & Washington, DC

SYSTEMS ENGINEERS/ SYSTEMS INTEGRATORS
2+ years in full lifecycle development, management and integration; DOD tactical systems, operations planning, spiral development, command and control, GIS, radar, DSP, electro optical, remote sensing, ISAR/ASAR, BPR, client/server, open systems requirements, rapid prototyping, software modeling and simulation; OO, C, C++, COTS, Lotus Notes.

REAL-TIME SOFTWARE ENGINEERS
All phases of lifecycle development for real-time control and command software; 3+ years' experience using C and UNIX to create real-time distributed software applications; demonstrated leadership and effective communication skills required.

SENIOR DATABASE ARCHITECTS
MIS and scientific databases for VAX/VMS and UNIX using Ingres, Sybase, Oracle and Empress platforms; distributed database management; OO database design and IBM mainframes; commercial development.

UNIX SYSTEMS ADMINISTRATORS
Administer large complex systems that support multiple users. At least two years of experience as a systems administrator on UNIX (Solaris or System V) operating systems is essential. Experience building workstations, troubleshooting and restarting systems and installing packages is also sought. Knowledge of Sybase is a plus.

UNIX SYSTEMS PROGRAMMERS
System installations, upgrades and tuning for large, complex networks; 3+ years of experience programming in C on UNIX platforms (Solaris or System V); working knowledge of system interface programming and network protocols like TCP/IP.

UNIX PROGRAMMERS/ ANALYSTS
Full lifecycle development on Sun workstations with 2+ years of experience with C/C++ and/or Ada running on UNIX.

SYSTEM ARCHITECTS
High-performance, high-availability information system design; 5-10 years of experience with data networking technology including Ethernet, serial data comm circuits, routers hubs; network ISO model and modern protocols such as TCP/IP, IPX, AppleTalk; Internet access; PC, Mac Sun, HP, other UNIX workstations; analytical and measurement tools for diagnostics and troubleshooting.

For some positions, U.S. citizenship is required; individuals who have undergone an SSBI, or are willing to undergo such, are preferred.

COMMERCIAL SYSTEMS INTEGRATION
Atlanta, GA; Huntsville, AL; Philadelphia, PA; Washington, DC

OBJECT-ORIENTED ANALYSTS AND DESIGNERS
Provide OO instruction and mentoring support to clients and lead systems integration efforts; 5-8 years of broad-based experience in computer applications, consulting or instruction; excellent knowledge of OO techniques, development methods and tools; superb presentation skills.

SENIOR SYSTEMS ENGINEERS
Lead the design and development of system architectures and total system solutions for complex enterprise-wide challenges; 7-10 years of experience, including some at the supervisory level, in system design and development; in-depth expertise in key technologies and industry applications, including telecommunications, information management, GUI, OO, C++, databases, client/server environments and system architecture design.

If you are ready to make a positive change for your future, look into these opportunities today. Please fax your resume to Dept. OA9508Q at (800) 461-5789 or mail to our central staffing office at: Lockheed Martin, Dept. OA9508Q, P.O. Box 8048, Building 10, Room 1019, Philadelphia, PA 19101. An equal opportunity employer.

LOCKHEED MARTIN

Distributed Systems Software Engineer: Participate in the technical team which defines the direction and priorities for improvements and evolution of current and future proprietary products, and advise management on technical issues. Make improvements as necessary to insure the robustness and performance of current modules. Advise engineers in new product development, performance evaluation, soltware support and course development. Advise and assist customers as required. Provide internal and external training on advanced capabilities of proprietary products. Design a new communications module for a general purpose toolkit for building fault tolerant distributed systems and research various design issues. Upon completion of the design phase, responsible for the implementation ol various components of the overall product. Knowledge of simple and concurrent programming, software analysis, software engineering, distributed systems, Kernel Programming, micro-kernel and multi-threaded operating systems such as MACH, as well as UNIX and its derivatives, network protocols including TCP/IP, object oriented technology, computer and network hardware, complex concurrency issues in computer systems. Demonstrated ability to give presentations and lectures. Master of Science in Computer Science and 3 yrs exp. in job offered or 3 yrs. exp. conducting Graduate Level Research in Distributed Systems. M-F, 9-5, 40 hrs/wk, $100,000.00/yr. If interested please send two (2) resumes to: Case No. 50763, P.O. Box 8968, Boston, MA 02114.

PROGRAMMER ANALYST: (2 positions) 40 hrs./wk., 8am-5pm, $49,000/yr. Carry out analysis of program specifications, program design, coding & testing of computer systems for manufacturing applications & on-line databases under IBM 3090 m/f environment utilizing IDMS DB/DC, CICS, ADS/O & COBOL II s/w. Reqr. Bachelor's degree in Computer Science or Electrical Engnrng or Mechanical Engnrng and 2 yrs. expr. in job offered or 2 yrs. expr. as Computer Consultant and/or System Analyst and/or Software Engineer. Reqr. work experience in analysis & design of application systems utilizing IBM 3090 m/f, IDMS DB/DC, CICS, ADS/O & COBOL II s/w. "Employer paid ad". E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit. MI 48202. Ref. No: 116595.

PROGRAMMER ANALYST: (2 positions) 40 hrs./wk. 8 a.m. - 5 p.m., $47,000.00/yr. Carry out the analysis of program specifications, program design, coding and testing of computer application systems for manufacturing and industrial applications on IBM m/f utilizing DB2, CICS, CSP & COBOL. Prepare test suites and assist in implementation of the system. Requires bachelor's degree in Computer Science or Electrical Engineering or Mechanical Engineering. Reqr. 2 yrs. expr. in job offered, or 2 yrs. expr. in Systems Analysis &/or Programming &/or Software Engineering &/or Computer Consulting. Reqr. work expr. in development of s/w applications on IBM m/f utilizing DB2, CICS, CSP & COBOL. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No.: 133295

SYSTEMS ANALYST - Evaluate current & projected requirements. Provide project planning within parameters of existing systems priorities & budget. Analyze, design, develop project specs. Req. Master's in Comp. Sc. & 1 yr exp in job or related EDP occupation Exp must incl Client Server for Wide Area Distributed Systems, Performance Tuning of Applications lor LAN/WAN, Database Modeling, ORACLE, DB2, SOL Server, WINDOW NT, MVS, UNIX. $41,500/yr. 40hrs/wk. 8:00am - 5:00pm. Job Site: Beaverton, OR. Send rosume to Employment Department, Attn: Job Order #5550963, 875 Union Street N.E., Room 201, Salem, OR 97311

NETWORK ANALYST: Provide technical support for X-window-based local and wide area networks, computer hardware, software installation and testing; perform preliminary analysis to determine size, scope, and objectives of applications projects; develop specifications for programs or component modules of an implementation; develop or participate in the development of test plans and test data; analyze computer network flows; perform UNIX and Novell system administration; install and maintain local area networks. Six years' college, Master's degree in Computer Science required. Graduate work must include at least one course in each of the following subjects: Advanced Operating Systems; Advanced Computer Architecture; Distributed Processing and Interconnected Networks; Computer Vision; Computer Graphics. Graduate level research work must include research, design and implementation on X-window-based user interface lor the analysis of Network Flow. Forty hrs./wk.; 9 am - 5:30 pm; $45,000/year. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of resume to: D. Gehl, Reference #1199, Ohio Bureau of Employment Services, P.O. Box 1618, Columbus, OH 43216. NO CALLS. AN EMPLOYER PAID AD.

PROGRAMMER ANALYST [2 openings) (Ref; 14249S) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' EDP systems; provide programming support & technical expertise to develop, implement & enhance systems for large amounts of information in multiple platforms for an integrated PIM (Product Information Management) sys. using RD8MS (Preferably Oracle), RD8MS database administration & data modelling & performance/tuning, Oracle Forms, Powerbuilder or Uniface, Unix, Novell Netware, Data Communications (LAN) & using PC Architecture. Reqs. 8ach. in Comp. Sci., Computer Information Systems, Computer, Electrical or Electronic Engineering, Systems Analysis, Mathematics or its equiv. in ed. & exp. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Consultant, Programmer Trainee or Engineer (Systems) in Management Services Division. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Must have some related exp. including analysis, design, development & using each of the following: Unix, C, Oracle, Powerbuilder & LAN-Novell Netware. $47,000/yr. 40 hr/wk., 8:30a-Sp. Send resume to 7310 Woodward Ave, Rm 41S, Detroit, MI 48202 & include Ref #. Employer Paid Ad.

RENO/TAHOE

Response Time, Inc. a well respected company serving over 100 Fortune 500 type companies is experiencing tremendous growth. Join Us. Current staffing requirements in Reno/Tahoe are for:

- D82/CICS • ADA8AS/NATURAL
- D82 CSP • d8ASE, ETC.
- CICS/VSAM • AS 400 P/A's
- PC P/A's FOXPRO, PARADOX
- PC LAN SPECIALISTS
- MVS/CICS Systems Prog.

Response Time, Inc.
3100 Mill Street, Suite 210
Reno, NV 89S02
Ph: (702) 324-3387
Fax: (702) 324-7187

The Company With a Heart

SAP

We specialize in the placement of SAP professionals and have over 300 openings worldwide for long term contracts and permanent positions. We have low overhead, so we can pay you TOP rates.

Peoples Unlimited
1805 Sardis Rd. N. #103
Charlotte, NC 28270
Phone: 704-841-1135
Fax: 704-841-1173

SOFTWARE ENGINEER. (2 positions) 40 hrs./wk. 8 a.m. - 5 p.m., $50,500.00/yr. Carry out systems analysis, systems design, coding and testing of s/w application systems in IBM m/f environment running MVS/ESA utilizing JCL, VSAM, COBOL II programming lang., CICS & relational databases and hierarchical or network, databases. Requires bachelor's degree in Computer Science or Electrical Engineering. Reqr. 4 yrs. expr. in job offered, or 4 yrs. expr. in Systems Analysis &/or Programming &/or Software Engineering &/or Computer Consulting. Reqr. work expr. in development of s/w systems on IBM m/f utilizing DB2 or IDMS, CICS, MVS, JCL, VSAM and COBOL II. "Employer Paid Ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm 415, Detroit, MI 48202. Ref. No.: 141495

PROGRAMMER ANALYST: (2 positions) 40 hrs./wk. 8 a.m. - 5 p.m., $45,300.00/yr. Carry out the analysis of program specifications, program design, coding and testing of computer software application systems in IBM m/f environment utilizing DB2, CICS, & COBOL. Requires bachelor's degree in Computer Science or Engineering, or Electrical Engineering. Reqr. 2 yrs. expr. in job offered, or 2 yrs. expr. in Systems Design &/or Programming &/or Software Engineering &/or Computer Consulting. Reqr. work expr. in development of s/w systems in IBM m/f environment utilizing DB2, CICS, & COBOL. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref No.: 142295

TANDEM CONTRACTORS

New business has created several exciting new opportunities for TANDEM consultants with the following skills:

TAL • "C" • DBA • SQL • DSS

Contact Jay, Don or Heather @

DATA ARTS & SCIENCES, INC.
8 Strathmore Road
Natick, MA 01760
1-800-448-3274
FAX S08-6S1-2936
EMAIL dasi@ixl.com

PROGRAMMER ANALYST: (2 positions) 40 hrs./wk., 8am-5pm, $42,000/yr. Carry out design, construction, integration and testing of computer application software utilizing UNIX, ORACLE and POWERBUILDER. Require Bachelor's degree in Computer Science or Electrical Engineering or Mathematics and 2 yrs. expr. in job offered or 2 yrs. expr. as Software Engineer and/or Programmer Analyst. Reqr. work experience in design & development of software applications utilizing UNIX, ORACLE and POWERBUILDER. "Employer paid ad". E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No: 116695.

Programmer/Analyst - Analyze, design, develop, implement computer applications & programs; develop, design functional specilications; undertake data modeling & prototyping; convert databases to SYNON 2E model; provide technical support; use AS/400, AS/400 CASE tools, SYNON 2E, Silver Run, SYNON 1E. No deg. rqud. 3yrs/exp. in job olfered. 40hrs/wk (9-6;M-F); $55,000/yr. Must have proof of legal authority to work in the U.S. Apply in person or by resume to: Georgia Department of Labor, Job Order #GA 5887864, 2972 Ask-Kay Drive, Smyrna, GA 30311-1605 or the nearest Department ol Labor Field Service Office. An employer paid ad.

Now you have a better way to recruit university and college students planning computer careers:

Computerworld's eighth annual Campus Recruitment Edition

If you recruit top computer career students on America' campuses, your message in this special issue will target more of them than any other newspaper or magazine!

Now you can recruit computer talent on campus without leaving your office!

That's because 100,000 copies of this special issue will be distributed to America's best and brightest students enrolled in Information Systems (IS), Computer Science, Computer Engineering, Electrical Engineering, and just about any other computer-related curricula.

Finally you can cost-effectively reach the quality and quantity of students you need!

And you can do it with just one ad in Computerworld's Campus Recruitment Edition! For a rate card reflecting complete campus distribution, call John Corrigan at 800/343-6474 (in MA, 508/879-0700). But hurry...
This issue closes September 15, 1995.

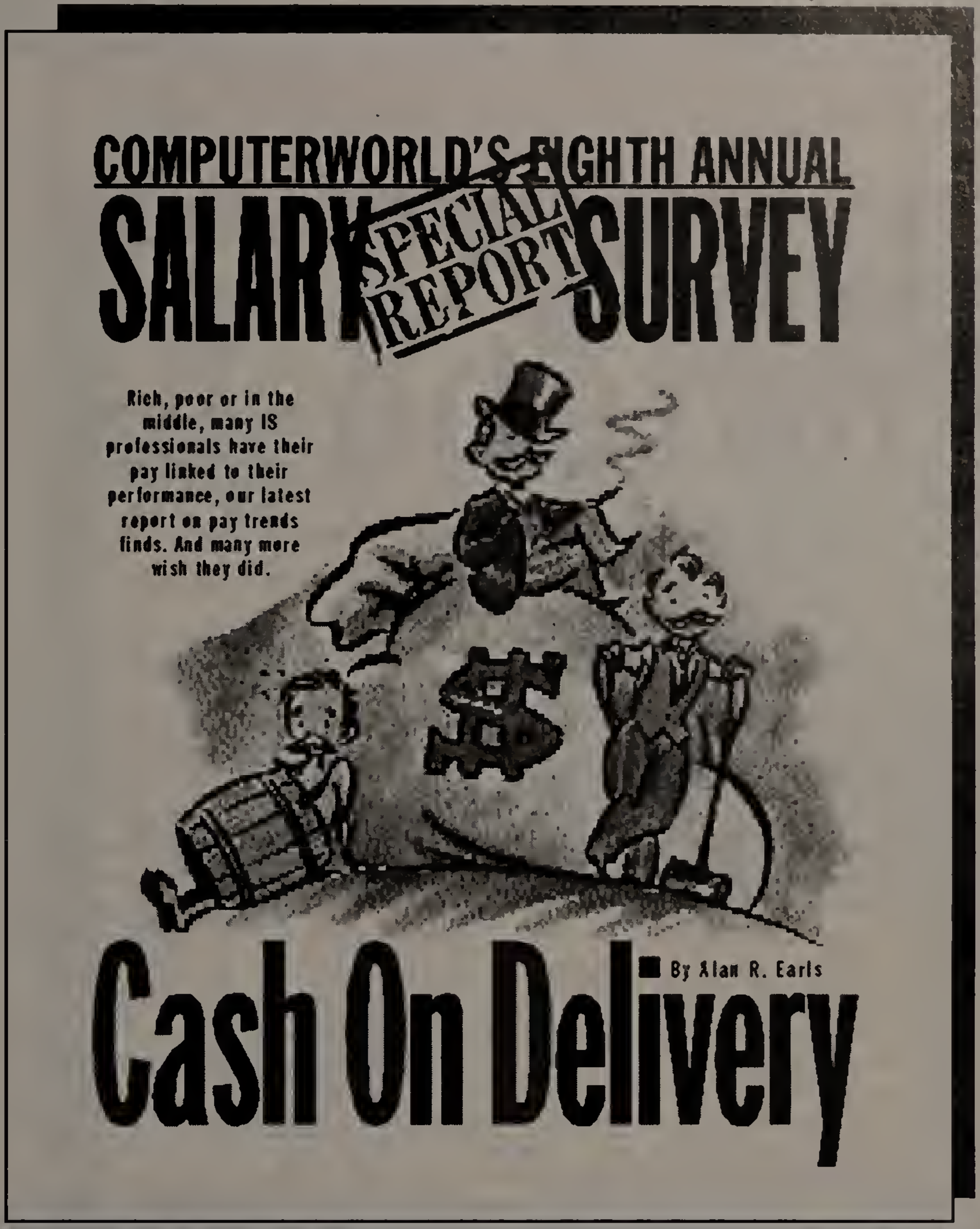
CAMPUS
8TH ANNUAL CAMPUS RECRUITMENT EDITION
8th ANNUAL

Issue Date: October 31, 1995
Close: September 15, 1995

Attention IS Professionals

Find out where the money is! ***Computerworld's 1994/1995 Salary Survey*** disk is just what you need to get an inside look at what professionals are getting paid.
Get the facts on:

- Salaries in 28 IS specific job titles
- Salaries in 21 industries
- Salaries by geographic regions - not published anywhere else



COMPUTERWORLD'S EIGHTH ANNUAL

SALARY SPECIAL REPORT SURVEY

Rich, poor or in the middle, many IS professionals have their pay linked to their performance, our latest report on pay trends finds. And many more wish they did.

Cash On Delivery

By Alan R. Earls

Call toll-free
1-800-495-0157, ext.10

COMPUTERWORLD'S EIGHTH ANNUAL
SALARY SPECIAL REPORT SURVEY

ONLY $99

Call to order ***Computerworld's Salary Survey*** on disk today.

CORPORATE USERS FIND NEW USES FOR WINDOWS DBMS PACKAGES, BUT HEADACHES, TOO. SEE GUIDE, PAGE 77.

DESKTOP databa$e$

Initial purchase prices are a steal, but associated long-term costs add up

By Daniel Lyons

Desktop database products are usually inexpensive, but their low prices can be deceptive. Over time, these products can generate associated costs totaling far more than the purchase price.

In fact, in the long run, the initial purchase price of a desktop database will probably represent only about 15% of the total costs associated with using that product, says Richard Finkelstein, president of Links Technology Corp., a database consulting firm in Chicago.

"These products are, in a sense, a Trojan horse," Finkelstein says. "They look very appealing, but when you try to use them, you can get overwhelmed with the cost."

The cost factor

Typical expenses include developing, testing and maintaining applications, the cost of training and supporting users and the cost of having data that is often scattered and inconsistent.

This last expense is perhaps the most difficult to quantify but probably the most significant, says Donald Feinberg, database analyst at Gartner Group, Inc.'s Santa Ana, Calif., office.

"The biggest hidden costs with these database products stem from the fact that some percentage of them contain valuable corporate information that is generally inaccessible to everyone else in the corporation. The cost of making that data accessible to other users is unbelievable," Feinberg says.

Client/server database systems, such as those from Oracle Corp. or Sybase, Inc., were designed with features that maintain the integrity and consistency of data. But with desktop databases, an information systems shop can encounter the nightmare of trying to impose controls onto hundreds of scattered databases.

"The cost of putting some type of integrity on top of that data is huge," Feinberg says. The growing number of mobile users adds to the dilemma as valuable data is, in effect, pushed farther away from the rest of the organization. Feinberg says users get "sucked in" to desktop databases because they are easy to use, but using them can create a headache for IS.

Needs assessment

From the IS perspective, the first and most important consideration is the kind of applications users are going to develop, says Paul Santinelli, product manager for Lotus Development Corp.'s Approach. "It may be that your application requires a more high-end database," he says. "The first step is to figure out if a desktop database is even appropriate."

If it is appropriate, consider the costs associated with developing applications, training users and integrating the database product with other products, including back-end databases residing on servers, Santinelli says.

Santinelli touts the fact that regular users can develop applications in Approach without using scripted language — which means companies can save money because they don't have to hire programmers. "A good rule of thumb is that if a product requires you to generate code, it's going to cost you more money than if you don't have to generate code," he says.

Another cost factor to consider is the kind of back-end links the desktop database contains. Products that rely on open database connectivity drivers work fine with SQL back ends but may not work well with others, Santinelli says. He adds that the PowerKey technology in Approach, which provides native links to various back ends, offers better performance and fewer headaches — and consequently lower cost of ownership.

But every vendor will make a case for its product's ease of use and lower cost of ownership. Microsoft Corp., for example, touts the fact that its Access database comes with unlimited free support, while other vendors offer free support for only three months.

Different set of problems

Finally, there is support to consider. Fixing bugs, rolling out new versions of applications and managing upgrades in the base software are examples of the tasks that end up costing money, says Herb Edelstein, principal and founder of Euclid Associates, Inc., a client/server consulting firm in Potomac, Md.

In some ways, desktop databases can be more of a support burden than client/server products, if only because those systems come with more rigid administration standards, Edelstein says. "With Sybase or Oracle there is a significant barrier to entry," he says. "On the desktop, it's harder to enforce standards."

An organization can choose a standard desktop database, but that doesn't always keep users from buying something else and then calling for help when they get in over their heads.

"They're like people who overestimate their abilities and go climbing in the mountains where they are not qualified to be," Edelstein says. "Even though they're in the wrong, you have to send out a rescue party. You can't just let them die." ■

Lyons is a freelance writer in Ann Arbor, Mich.

Contra¢t help pri¢ey

A desktop database product may cost only a few hundred dollars, but "the total cost of the time required to learn to use the application and the cost for developing, testing and maintaining that application can come to tens of thousands of dollars," says Richard Finkelstein, president of Links Technology, a database consulting firm in Chicago. Companies may easily create a simple application such as a mailing list, but once they start to build on it, they can quickly get in over their heads. At this stage, an outside consultant may be necessary. Contract programmers who know Microsoft's Access charge about $75 an hour — which works out to $3,000 a week. Considering it could take several weeks to develop and deploy a sophisticated application, you may want to shop around. — *Daniel Lyons*

> **"These products are, in a sense, a Trojan horse. They look very appealing, but when you try to use them you can get overwhelmed with the cost."**
>
> — RICHARD FINKELSTEIN, PRESIDENT, LINKS TECHNOLOGY

ADVERTISERS LISTINGS

MARKETPLACE
Where IS Buyers Find Solutions

INDEX

Automatic NLM Scheduler	
Knozall (800) 333-8698	pg 105
Buy / Sell / Lease	
Carlson Computer Int'l (800) 334-7073	pg 107
Computer Presentation	
Boxlight (800) 762-5757	pg 106
Panelight (800) 726-3599	pg 106
Connectivity Software	
Frustum Group (800) 548-5660	pg 105
Large Systems Computers & Peripherals	
Spectra Equipment (800) 745-1233	pg 105
Outsourcing/Remote Computing	
Alicomp (800) 274-5556	pg 107
American Software (404) 264-5770	pg 107
Faneuil Systems (708) 574-3636	pg 107
Personal/Group Information	
Stratagy (800) 833-0724	pg 105
Security	
Secure It (800) 451-7592	pg 106
Systems & Services	
Dempsey Business Systems (800) 888-2000	pg 107
Time & Services	
Bridge Publishing (800) 367-8788	pg 108
Training for Corporate End-Users	
Keystone Learning Systems (800) 748-4838	pg 105
Used Equipment & Deinstallation	
Electronic Resource Recovery (914) 427-2151	pg 107

CLASSIFIED SOLUTIONS DIRECTORY

Bids/Proposals

Electronic Data Interchange

Electronic Documentation

PC Solutions

TRADESHOWS & EXHIBITIONS

Object World*
San Francisco
August 15 - 17:
Networks Expo*
Dallas
September 12 - 14:
Interop & Networld*
Atlanta
September 25 - 29:
Unix Expo*
New York
September 26 - 28:

*Indicates Bonus Distribution

Premier Solutions

New Directions for Stratus Users

at STRATAGY
September 17-20, 1995
Westin Bonaventure Hotel
Los Angeles, CA

Register now for the 10th annual Stratagy meeting

Users Conference & Trade Show
September 17-20, 1995

Education Seminars
September 16-17, 1995

- Trade show floor
- Technical sessions
- Vendor sessions
- Stratus education

Keynote Speaker
Bill Foster
CEO, Stratus Computer, Inc.

Enter to win a new Stratus Computer!

Call 1-800-833-0724
More info at www.stratus.com

Video Training for Your Entire Enterprise

Dawn Bjork
Microsoft Certified Trainer & MS Word Instructor

Rob Aronson
NetWare 4.1 Instructor & Novell CNI & ECNE

Alison Balte
Microsoft Certified Developer & MS Access 2.0 Instructor

Call for Free Demo Video and Catalog

Word 6.0	
Beg/Int/Adv (ea)	$49.95
Special-All Three	$129.95

Access 2.0	
Beg/Int/Adv (ea)	$49.95
Special-All Three	$129.95

Windows 3.1	
Beg/Int/Adv (ee)	$49.95
Special-All Three	$129.95

Excel 5.0	
Beg/Int/Adv (ea)	$49.95
Special-All Three	$129.95

Project 4.0	
Level I/II/III/IV (ee)	$79.95
Special-All Four	$299.95

Other Videos	
PerfectOffice	Call
SmartSuite	Call
Visual Basic	Call

NetWare 4.1	
Level 1/2/3/4 (ee)	$89.95
Level 5/6/7 (ee)	$89.95
Special-Any Four	$329.95
Special-All Seven	$495.95

Lotus Notes 3.x	
App. Dev. Lev 1	$89.95
App. Dev. Lev 2	$89.95
Sys. Adm.Lev1/2 (ea)	$89.95
User	$49.95
Special-All Five	$379.95

Windows NT 3.5	
Installation	$89.95
NT Server Level 1	$89.95
NT Server Level 2	$89.95
NT Workstation	$89.95
Special-All Four	$299.95

SQL Server 4.x	
SQL Ser.Lev 1/2/3 (ea)	$89.95
VB/SQL Connection	$89.95
Special-All Four	$329.95

Microsoft Office

Special Microsoft Office Video Combinations

Microsoft Office 4.x Standard_______$349.95
- 3 Word 6.0, 3 Excel 5.0, 3 PowerPoint 4.0
- 9 videos with over 17 hours of training

Microsoft Office 4.x Pro_______$495.95
- 3 Word 6.0, 3 Excel 5.0, 3 Access 2.0
- 3 PowerPoint 4.0, 1 MS Mail training videos
- 13 videos with over 24 hours of training

Microsoft Office 4.x Plus_______$579.95
- 3 Word 6.0, 3 Excel 5.0, 3 Access 2.0
- 3 PowerPoint 4.0, 3 Windows 3.1, 1 MS Mail
- 16 videos with over 29 hours of training

Microsoft SOLUTION PROVIDER

Ask About Windows 95 & Office 95

KeyStone Learning Systems Corp.

Average: 2 hours per video

RISK FREE 30 DAY Money Back Guarantee

3 Easy Ways to Order:

CALL ▶ 1-800-748-4838
801-375-8680

FAX ▶ 1-801-373-6872

MAIL ▶ KeyStone Learning Systems Corp.
2181 Larsen Parkway
Provo, UT 84606

AD# CD85

We accept C.O.D., Company P.O. or check +

IBM

- ES/9000
- SERIES/1
- AS/400
- RS/6000
- SYSTEM/88

...and more!

New & Used
- *Computers*
- *Peripherals*
- *Upgrades*

Buy • Sell • Rent • Lease

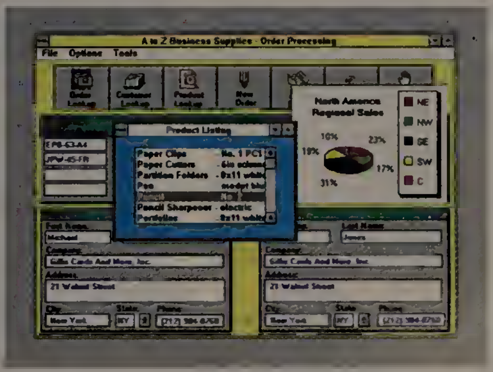
SPECTRA
(800) 745-1233
(714) 970-7000 • (714) 970-7095 Fax
Anaheim Corporate Center
5101 E. La Palma Ave., Second Floor
Anaheim, CA 92807

amdahl
Cisco
Concurrent
Data General
digital
Hitachi
HEWLETT PACKARD
Stratus
Sun
TANDEM
UNISYS
XEROX

Connectivity

DOS | Windows | OS/2 | UNIX | MAC

From this... To this



...In Minutes!

For Users, *TransPortal PRO*™ is a new look for the mainframe.
For Developers, it's results in the blink of an eye.

Develop Customized PC based front ends for Mainframe and Mid-range applications using ***TransPortal PRO***. Create Cooperative and Distributive processing applications, making host applications flexible and easier to use.

Use PC development tools that you already know, like **Visual Basic**™, **PowerBuilder**™, **ObjectVision**™, **Gupta's SQLWindows**™, **Access**™, **C**™, **Turbo C**™, **C++**™, **dBase**™, **FoxPro**™, **Clipper**™, **QuickBASIC**™, **Clarion**™, **MicroFocus Cobol**™, **KnowledgePro**™, **Spinnaker PLUS**™, and others to write the user interface.

No additional host software or code changes are required!

TransPortal PRO works with 3270, 5250, and VT100/220 emulators and runs under DOS, Windows, and OS/2. Increase development productivity and retain existing data security and integrity.

*Call Now for a **FREE** Demo Disk **1-800-548-5660!***

The Frustum Group, Inc.
90 Park Avenue, Suite 1600, New York, NY 10016
(800)548-5660 OR (914)428-7200 FAX: (914)428-0795

TransPortal PRO is a registered trademark of The Frustum Group, Inc. Other product names are trademarks of their respective companies

---

FILEAUDITOR® TELLS ALL!

WHO GOT INTO WHAT FILES, WHEN?

FileAuditor enhances your network security by...

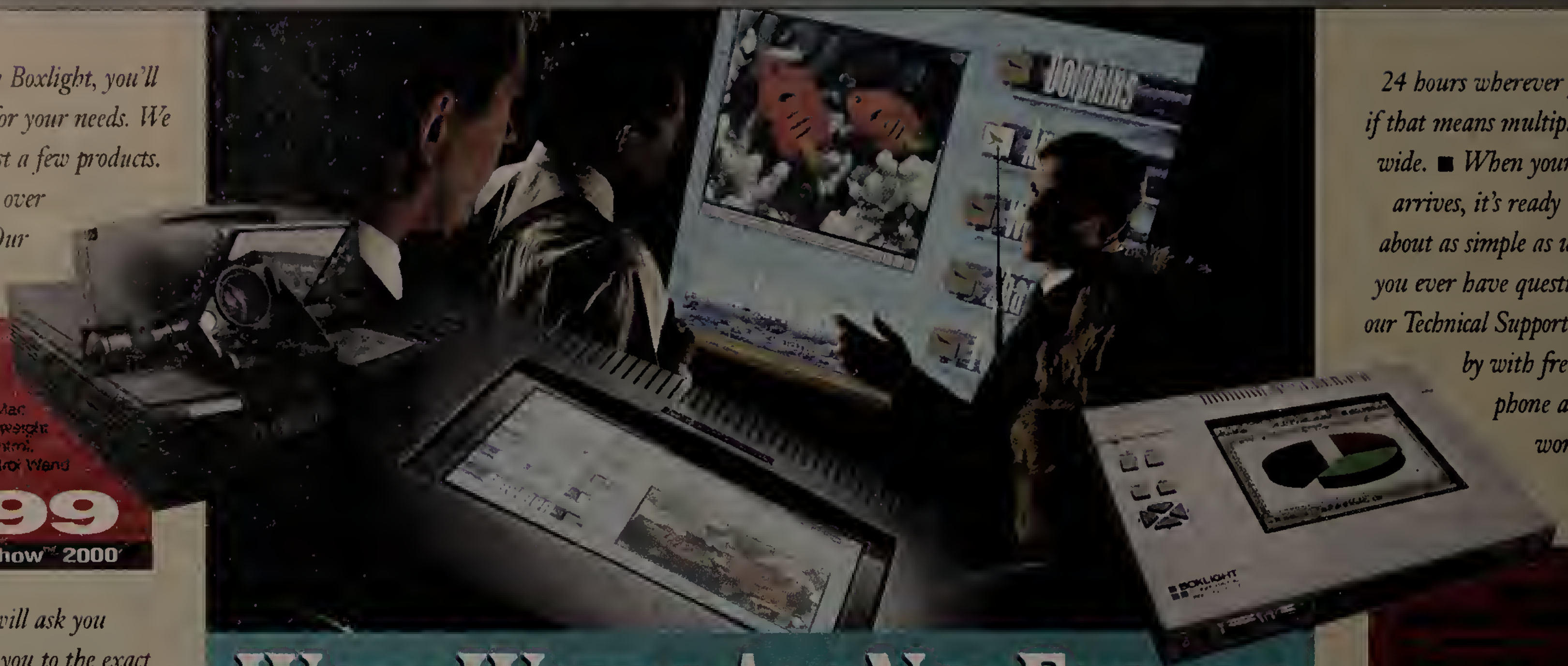
▲ Tracking file and directory activity on the network.
▲ Having proactive network security with NLMAuto or NLMerlin
▲ Denying access to specific files.
▲ Generating custom reports.

If you need enhanced network security

Call: **1-800-333-8698**
FAX: (602) 545-0008
Knozall Systems, 375 E. Elliot Rd, #10 Chandler, AZ 85225
A Division of Tongrom Enterprise Solutions

Knozall

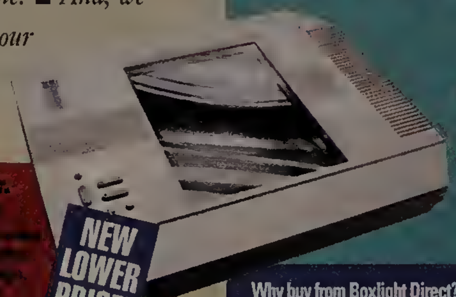
When you buy from Boxlight, you'll get the exact system for your needs. We don't limit you to just a few products. You can choose from over 50 models in stock. Our trained people will ask you questions and guide you to the exact solution for your situation, sometimes at a lower cost than you might have thought possible. ■ *And, we guarantee to ship your order in less than 24 hours wherever you need it even if that means multiple locations worldwide.* ■ *When your new equipment arrives, it's ready to go. Set-up is about as simple as using a toaster. If you ever have questions or need help, our Technical Support Group is standing by with free after-the-sale phone assistance. Every work day. Forever. No charge.*



All-in-one Color. No OHP Needed.
- Sleek, stylish design
- Compatible with PC or Mac
- Less than 20 lbs. travel weight
- Includes free remote control.
- Optional Computer Control Wand

$3999
Boxlight ColorShow™ 2000

$2999
Boxlight ProColor™ 1301



Affordable Color. Classy [illegible]
- Bright[illegible] color [illegible]
- New faster [illegible]
- C[illegible]pact pr[illegible]
- Free remote [illegible] cab[illegible]
- Mac or PC Comp[illegible]

NEW LOWER PRICE!

$1999
Boxlight ColorShow™ 1200

WHEN WORDS ARE NOT ENOUGH...

Purchase Orders Accepted (some restrictions).

CALL BOXLIGHT!

CMPWRD1

Leasing and Rental Options Available

1-800-762-5757

Monday through Friday, 6am–5pm, Pacific Time.
All Boxlight products carry a 30-day no risk money-back guarantee!

Government: (800) 497-4008 • Resellers: (800) 736-6956
International: (360) 779-7901 • Rental: (800) 736-6934 • Fax: (360) 779-[illegible]

Wide variety. Over 50 models in stock!

CALL FOR OUR LATEST SPECIALS!

Purchasing presentation equipment doesn't get any more convenient. Just pick up the phone and dial. There's absolutely no risk in buying from us, because if you're not happy with your purchase, call us within 30 days and return it for your money back. No hassle. No risk!

Why buy from Boxlight Direct? ■ Immediate dialog with knowledgeable people the first time you call. ■ Immediate help in finding the most appropriate equipment for your unique situation — from our on-hand inventory of over 50 models. ■ Immediate service of everything we sell by our in-house service group. Industry leading Uptime Assurance Program. ■ Immediate overnight delivery to multiple world-wide locations. ■ Hassle-free 30 day money back guarantee. ■ Rentals. ■ Free lifetime after-the-sale technical support should you have any questions. ■ **Call today and ask for a [illegible] catalog.**

BOXLIGHT DIRECT

VISA MasterCard American Express FedEx Federal Express

Inc. 500

Power Tools for the Power Presenter

One stop shop for all major brands

Convention
Travel
Forecast

SALES•LEASES•RENTALS

COLOR from $1,795

For the latest in color projection panels and projectors call the experts in LCD technology. Your satisfaction guaranteed or your money back. Quick delivery via Fed-X or UPS.

Call for CATALOG 1 800 726 3599

Panelight
DISPLAY SYSTEMS, INC.

101 The Embarcadero Ste. 100-A, San Francisco, CA 94105
Hours: 6:30 to 5:30 PST, 9:30 to 8:30 EST
VOICE: 415 772 5800 FAX: 415 986 3817

Kāblit™ Security

NOW!

STOP COMPUTER THEFT

IN THE OFFICE — ON THE ROAD

- **Secure computer or notebook to desk, table, etc.**
- **Protect data**
- **Lifetime warranty**

Kāblit™ II
Fixed Location List $34.95

Kāblit™ T-Lock
Any Location List $39.95

Disk Drive Lock
Data Security List $24.95

Padlock Security Provided by Master® Lock

TOUGH UNDER FIRE

Quick And Easy To Install!
Compact — Lightweight!
Available For Macintosh Computers Too!

Order Now — Call 800-451-7592

Secure-It

18 Maple Court, East Longmeadow, MA 01028, USA 413-525-7039

The particular Master® Lock Trademarks used are trademarks of the Master® Lock Company and are used by Secure-It, Inc. under license.

Dempsey: Your Source For IBM® Equipment

Buy
Sell
Lease
Rent

- RS/6000
- AS/400
- Industrial PC
- System/36
- Series/1
- [illegible]
- [illegible]
- [illegible]

- Processor
- Peripherals
- Upgrades

For [illegible] equipment, flexible financing, configuration planning, technical support and [illegible]

IBM

(800) 888-2000

Carlson Computer International

• BUY • • SELL •
• LEASE • • TRADE •
•• RENT ••

- SYSTEMS
- UPGRADES
- DISKS
- WORKSTATIONS
- MEMORY
- PERIPHERALS

DEC & SILICON GRAPHICS

NEW . . Discounted from list price
USED . . . At a fraction of list price

"We love spending money buying computer gear"

800-334-7073

Association of the dda DEC Marketplace

Carlson Computer International
11956 Bernardo Plaza Dr. #503
San Diego, CA 92128
(619) 675-3377
FAX (619) 675-3379

Buy, Sell, Deinstall

- Purchase of used mainframe systems and peripherals
- Deinstallation Services

Wanted to Buy

• 3370	• 3420
• 3380	• 3422
• 3390	• 3480
4381	• 3090

914-427-2151 Fax: 914-427-7791

ERR
Electronic Resource Recovery
PO Box R • Henry Henning Dr.
Maybrook, NY 12543-0316
Contact: Bob Hewitt

ALICOMP/CBS

A Unique Outsourcing Services Provider

OUTSOURCING • REMOTE COMPUTING

TRANSITIONAL AND LONG TERM CUSTOM SOLUTIONS
VM • MVS • VSE 105,000 sq.ft. SECAUCUS, NJ COMPLEX

"OUR PLATFORM IS CUSTOMER SATISFACTION"

SERVING CLIENTS SINCE 1980
800 274-5556 • 212 886-3600

If You Aren't Running In The Computerworld Card Deck, There's No Telling Who's Monkeying Around Reading Your Message!

With all the direct marketing options available to IT marketers today, it is more important than ever to find a vehicle that will deliver your message to an audience of proven IT buyers.

Computerworld Direct Response Cards are the cost-effective and powerful answer. Place a card in the deck and your message is delivered directly to the desks of over **143,000 influential IS professionals** who pay to receive Computerworld each week and have $$$ to buy your product!

Call Today to Find Out How Effective Computerworld Direct Response Cards Can be!

Norma Tamburrino
National Account Manager
(800) 252-4821, ext 409

Your best choice for mainframe computing services.

OUTSOURCING

REMOTE

COMPUTING

Extensive Software Library

Telenet	Tymnet
Advantis	Compuserve

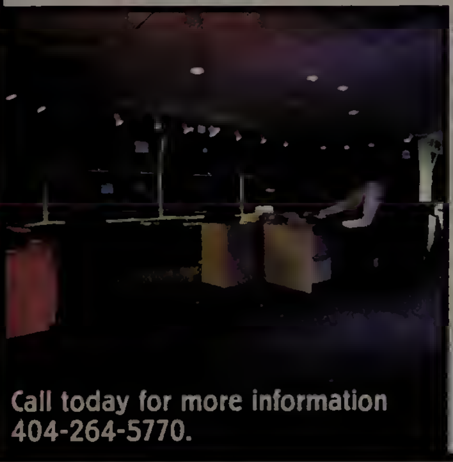
MVS/ESA	IMS/DBDC	
VM/ESA	CICS	SAS
VSE/ESA	TSO	DB2

Extraordinary Customer Service
Migration Management

708-574-3636
New England 617-595-8000
815 Commerce Drive, Oak Brook, IL 60521

FANEUIL SYSTEMS

Outsourcing



Call today for more information
404-264-5770.

Supplement your IS operation...

- Mainframe Processing
- Report Distribution to CD-ROM
- AS/400 Remote Management
- Network Management
- Applications Support
- Operations & Technical Support, and more

Quality Account Management
Satisfied Clients

We will help evaluate your options, formulate a flexible strategic and expeditious plan to help reach your goals - and get the fastest return on your investment.

The Outsourcing Group
A Unit of American Software USA, Inc.
470 E. Paces Ferry Road
Atlanta, GA 30305
404-264-5770

When life becomes a battleground ...

your mind is your best weapon.

Unlock the full potential of your mind.

Buy and read

DIANETICS®

THE MODERN SCIENCE OF MENTAL HEALTH

by L. Ron Hubbard

The unconscious, subconscious, or reactive mind underlies and enslaves Man. It's the source of your nightmares, unreasonable fears, upsets and any insecurity.

Get rid of your reactive mind. Buy and read DIANETICS. $6.99 paperback. Available at your local bookstore or call 1-800-367-8788.

©1995 BPI. All Rights Reserved. DIANETICS is a trademark and service mark owned by RTC and is used with its approval.

Informative Editorials for Buyers

Coming in August & September

COMPUTERWORLD
Marketplace

8/21 WHAT'S HOT FOR CD-ROMS?

8/28 CLIENT/SERVER FINANC[illegible]
HOW INTEGRATED DO YO[illegible]?

9/4 MANAGING USERS' EXP[illegible]
WINDOWS 95

For information on upcoming issues or to learn how you can place an ad in Computerworld Marketplace call 800-343-6474, ext. 744 today!

◆ BIDS / PROPOSALS

CITY OF KLAMATH FALLS REQUEST FOR PROPOSALS

The City of Klamath Falls is requesting proposal for consulting services to help in assessing the information systems need of the City. The needs assessment will define the requirements to replace the City's IBM System 36 hardware and software and other miscellaneous hardware and software currently in use throughout the City.

The City is interested in contracting with a consultant to assist with the systems needs for all City departments.

Interested parties may request a copy of the RFP by contacting Mindy Radford, Data Processing Manager at 500 Klamath Ave, Klamath Falls, OR 97601 or 503-883-5328.

Proposal must be submitted to Mindy Radford, City of Klamath Falls at 500 Klamath Ave, Klamath Falls OR 97601 by 4:00 p.m. on September 1, 1995.

The City is seeking a firm to provide consultant services, not as a means to market specific hardware and/or software. The City will not consider a consultant who directly or indirectly is interested in future sales of products to the City. This action is taken to maximize consultant objectivity in beginning able to present recommendations to the City about hardware and software.

The consulting firm must have prior experience in consulting for a minimum of five (5) city government entities a at least the size and complexity as the City of Klamath Falls.

◆ OUTSOURCING / REMOTE COMPUTING

Outsourcing Remote Computing
Enter Into an Exclusive PARTNERSHIP

- Become one of our SELECT clients/partners
- Receive customized, comprehensive, personalized service
- Take advantage of flexible pricing consistent with your strategic computer technology direction
- Benefit from Value Added opportunities
- We guarantee to maintain or exceed your present computer service levels

• Focus on Your Primary Business •
• Reduce and Control Your Expenses •

ALICOMP, INC/CBS
(800) 274-5556
(See our ad in the Marketplace)

◆ PC SOLUTIONS

Micro Focus COBOL, Dialog System, Panels2 solutions. Next EDition, Inc
(216) 498-0602

◆ ELECT. DATA INTERCHANGE

EDI software, consulting, & integration
Next EDition, Inc. 14+ yrs exp
(216) 498-0602

To place your advertisement in the Classified Solutions section CALL 1-800-343-6474 ext. 744

Attention IS Professionals

Call to order ***Computerworld's Salary Survey*** on disk today.

ONLY $99

Call toll-free 1-800-495-0157, ext.10

Let Computerworld deliver your message to over 140,000 IS professionals weekly. Using the improved "Classified Solutions" 4-color section. The section features both black/white & 4-color ads.
For more rate information about affordable display color ads call 1-800-343-6474 ext. 744

Check out our [illegible] section - Classified Solutions

Common Ad Sizes

1x2 7/8	3x2
1x5 7/8	3x5
1x8 7/8	4x2
1x11 7/8	4x5
2x2 7/8	5x2
2x5 7/8	5x5
2x8 7/8	5x11
2x11 7/8	

Please contact your sales representative for more information 1-800-343-6474 x 744

Microsoft®
SOLUTION PROVIDER DIRECTORY

Microsoft Solution Providers are independent organizations that provide consulting, integration, development, training, technical support or other services with Microsoft products. Microsoft Solution Providers implement business solutions for companies of all sizes and industries by taking advantage of today's micro-computer technology for graphical and client-server applications

Call A **Microsoft Solution Provider** listed below, or for program information or a referral, call **1-800-SOLPROV.**

Advanced Systems Training

Hilton Computer Strategies
6001 Savoy #207
Houston, TX 77036
Hilton Computer Strategies is the premier training facility in Houston for advanced systems training in Windows NT, Windows 95, Systems Management Server, and soon Information Exchange. Call
1-800-324-7415 for complete information.

Advanced Training/Consultant

Network Services Group, Inc.
8275 Allison Pointe Trail, Suite 375
Indianapolis, Indiana 46250-4207
Phone: (317) 579-5806 Fax: (317) 579-5807
E-Mail: 75361.3151@compuserve.com
NSG is Indy's NT networking leader. The "sales staff" is our team of Microsoft Certified Instructors/Engineers focused on enterprise solutions. Instructors are on-site consultants when not giving ATEC training.

Client/Server

Advanced Information Solutions
730 North Franklin, Suite 710
Chicago, IL 60610
Phone: (312) 751-9700 Fax: (312) 751-9053
We are a full-service consulting company, specializing in designing, developing, and implementing Client/Server enterprise systems. Utilizing Visual Basic, Access, SQL Server, and the Microsoft suite of products, we are Chicagoland's premier provider of custom business solutions.

COROMANDEL INDUSTRIES, INC.
70-15 Austin Street, Third Floor
Forest Hills, NY 11375
Phone: 800-535-3267 Fax: 718-793-9710
Leading developer of Client/Server products like Integra VDB. Services include design and custom development of cross-platform, graphical applications using C++, Visual Basic, Microsoft Office, BackOffice, NT, OLE and SQL databases.

Hummingbird Communications, Ltd.
2900 John Street
Markham, Ontario, Canada L3R 5G3
Phone: (905) 470-1203 Fax: (905) 470-1207
Hummingbird offers the most comprehensive, robust PC X connectivity product line available today. The eXceed product family is comprised of PC X software for Windows, Windows NT, OS/2 and OOS.

Jinks Technology Management, Inc.
2 Tomolonis Or., Nashua, NH 03062
Phone: (603) 882-8222 Fax: (603) 886-8886
Planning and Oevelopment assistance for Windows and Client/Server applications throughout New England. Staff includes Microsoft Certified System Engineer and Product Specialists.

SOLARC (800) 665-0883
Offices in Tulsa & New Orleans
We specialize in developing both departmental and enterprise wide client/server solutions, and provide consulting and training for:
Microsoft NT Visual Basic
SQL Server Visual C++

Unibased Systems Architecture, Inc.
14323 So. Outer Forty Rd., Ste. 300 South
St. Louis, MO 63017
Phone: 800-489-6069 Fax: (314) 878-2674
Providing migration of large scale legacy applications to a three tier client/server environment. USA's layered RAD tool (A*SET) provides ROBMS independence, generating standard C code for use with Win 95 and NT server

Consulting

Carnegie Technology Group, Inc.
1266 W. Paces Ferry Rd, Suite 508
Atlanta, GA 30327
Phone: (800) 499-7624 Fax: (404) 988-9889
We are recent PhO's from top schools including Carnegie Mellon, MIT, Georgia Tech. We specialize in solving complex problems using Visual C++, Visual Basic, Smalltalk, SQL Server, and ODBC.

Computermart of Georgia, Inc.
7274 Mount Zion Blvd.
Jonesboro, GA 30236
Phone: (800) 887-5105 Phone: (404) 478-5681
Fax: (404) 473-1726
Contract programming, consulting service & software development. Specializing in all industries & most applications. 17 years in business, diverse programming capabilities, multi-platform & a list of satisfied customers.

CoreTech Consulting Group, Inc.
565 East Swedeslord Road, Suite 102
Wayne, PA 19087-1611
Phone: (610) 971-0666 Fax (610) 971-0708
CoreTech is a leading Information Management consulting firm specializing in helping large organiztions plan and implement new technologies. We're recognized as experts in managing technology change, while protecting our client's current investments. . Skilled in Windows '95, BackOffice suite, MS development tools and MS Applications.

DHS & Associates, Inc.
10255 W. Higgins Rd., Suite 800
Rosemont, IL 60018
Phone: (708) 297-5600 Fax: (708) 297-5607
At DHS & Associates, we design and build practical information systems enabling our clients to anticipate and respond to rapidly changing business environments.

DIS Research Ltd
1500 Broadway, 31st Floor
New York, NY 10036
Phone: (212) 719-9696 Fax: (212) 382-24852
OIS Research is a full service desktop systems integrator serving the business community for the last ten years. With specializations in LAN, WAN design and implementations, systems support and applications development DIS maintains the depth and breadth of services needed to meet all your computing needs.

InterWorks Software, Inc.
1355 Willow Way, Suite 220
Concord, CA 94520
Phone: (510) 671-0810 Fax: (510) 671-4706
Get ready for Windows95! Building on years of cross-platform experience with Fortune 500 companies and the Microsoft Office/Back Office product suites, we will help you improve system and staff productivity through effective System Management Solutions today and tomorrow.

Navigist
Sunnyvale, CA (408) 744-1760
Colorado (303) 290-0232
Emphasizing Client/Server, messaging and connectivity technologies, Navigist designs, implements, and supports robust LANs/WANs. A service oriented organization, Navigist will be an extension of your IS staff.

NewData Strategies
16415 Addison Road, Suite 500
Oallas, TX 75248
Phone: (214) 735-0001 Fax: (214) 735-8008
Client/Server and ROBMS Solutions. NewOata Strategies offers Training and Consulting in Microsoft products and major Client/Server and DBMS Tools. We employ Certified PowerBuilder Oevelopers and Microsoft Specialists.
fice integration, SQL Server, and Windows NT support.

Synaxis Corporation
Contact: Sam Levine (Sam@Synaxis.COM)
617-449-4400 x140
Technical Competence!
Expert Application Oevelopment using Visual Basic. Focus on Imaging and E-Mail. Oatabase Analysis, Design, and Development for Access, SQL-Server, and others. Customized Visual Basic Front-ends and Oevelopment for Lotus Notes.

Taylor Management Systems, Inc.
2800 River Rd Ste 425
Des Plaines, IL 60018
Phone: (708) 803-1500 Fax: (708) 803-1509
EMAIL: carl@taylormgmt.com
Taylor is among the 25 largest consulting firms in Chicago. As a Microsoft Business Partner, we specialize in Microsoft solutions development, Mainframe to Client-Server conversions and statistical analysis using SAS.

SQLSoft, Inc., 10635 NE 38th Pl., Ste. 24B, Kirkland, WA 98033; phone: (206) 822-1287; fax (206) 822-1485

VIRTUALOGIC, Inc.
Phone: (301) 571-9476 Fax: (301) 571-8530
6701 Democracy Blvd., Suite 300
Bethesda, MD 20817-1574
Professionals with the skills you seek — where needed — when needed. On-site developers, OBAs or complete teams skilled in MS developement tools, PowerBuilder, MS BackOffice, Sybase and Oracle. Contact Mark Rogers.

Custom Software dev.

InfoDesign Inc.
108 Daventry Lane, Suite 101, Louisville, KY 40223 (502) 339-7144 (voice) (502) 339-7194

Personal P.C. Consultants, Inc. 11026 Prarie Hills Dr. Omaha, NE 68144 Phone: (402) 393-4548; Fax: (402) 392-0711

Database Design/Dev

Professional Computer Solutions, Inc.
383 Nordhoff Place, Suite 100
Englewood, NJ 07631
Phone: (201) 816-8002 Ext. 136 Fax: (201) 816-8113
PCSI focuses on developing database applications using Access, Visual Basic, Paradox, Microsoft SQL Server, Sybase, Oracle, and other products. We also perform technology planning, requirements analysis, architecture, and performance benchmarking.

Quantum Compliance Systems, Inc.
4251 Plymouth Rd.,
Ann Arbor, MI 48105
Phone: (313) 761-21752 Fax: (313) 761-3058
Environmental, Health & Safety Information Management Systems to assist with compliance with SARA, RCRA, CAA, TSCA, OSHA, CERCLA, DOT, and other regulatory requirements.

Education

CheckPOINT 17W240 22nd Street, Oakbrook Terrace, IL 60181. Phone:(708) 279-9030/fax: (708) 279-6359.

End-User Training

EEI
66 Canal Center Plaza, Suite 200
Alexandria, VA 22314-5507
Phone: (800) 683-5859 /(703) 683-0683 Fax: (703) 683-4915
Training, development, and consulting for Microsoft Access, Windows, Word, PowerPoint, and Excel. Multimedia development and training for Windows and Mac: Director, Toolbook, Premiere—also Photoshop, CorelORAW, QuarkXPress, Illustrator, PageMaker, Framemaker.

reSolution, New York area MS ATEC, (212) 255-1956
Get ready NOW for Windows 95, NT 3.5

E-mail Management

Baranof Software Inc.
85 School Street
Watertown, MA 02172
Phone: (800) 462-4565 Fax: (617) 926-6636
Leading provider of E-mail Management products, including MailCheck - multivendor graphical console providing end-to-end connectivity checking, error-levels, alerts, statistics, more! Call Kelly Walters for FREE demo!

Industrial Automation

C.B. Engineering Ltd
#20, 5920-11 Street SE
Calgory, Alberta, Canada T2H 2M4
Phone: (403) 259-6220 Fax: (403) 259-3377
CB Engineering represents industrial automation suppliers which include Intellution, Inc. (SCADA/MMI software) and IBM (Industrial Computers, Monitors, and Data Collection Units). Located in seven major Canadian cities, call 1-800-99CBENG (1-800-992-2364).

Line/business solutions

Granitek Systems, Inc.
Meredith Sq. #10
169 Rt. 3, Daniel Webster Hwy.
Meredith, NH 03253
Phone: (603) 279-1200 Fax: (603) 279-1201
SALES PARTNER - Integrated Sales and Prospect Management in Microsoft Access for Windows or Windows NT. Sales Force Automation with links to Word, Excel, Great Plains, Oynamics and Micro-MAX MRP.

Information Processing Corporation
5930 LBJ Freeway, Suite 300
Dallas, TX 75240
Phone: 1-800-IPC-FICS Fax: (214) 404-9287
IPC's products are: ABACUS, provides billing and resource utilization management for data processing centers; FICS, a relationship banking solution for financial institutions; Visual Security System, a security product for developers.

JMJ Technologies, Inc.
Phone: (404) 509-5653/(800) 677-5653 Fax: (404) 973-8194
Quality client/server solutions using OO technology. UIs include PowerBuilder, VB, C++. OBMSs include SQL Server, Sybase, Ingres, Access. Solutions glued with OLE, ODBC, DDE, Wireless LANs, Remote Access.

Micro-Frame Technologies, Inc.
430 N. Vineyard, Suite 102
Ontario, California 91764
Phone: (909) 938-2711 Fax: (909) 984-5382
ProjectServer converts Microsoft Project into a client/server solution for managing multiple projects. Features multi-project task updating with automatic posting to Project; on-line status reports; action item tracking; automated file uploading; and timesheets.

SQL Financials
Two Ravinia Drive, Suite 1000
Atlanta, GA 30346
Phone: (404) 390-3900 Fax: (404) 390-3999
SQL Financials develops and support cross-industry client/server financial applications for a wide range of environments. These high performance applications are fully functional, intuitive, quick to implement and provide a rapid return on customer investment

Systems Integration

Corporate Software Inc.
2 Edgewater Dr.,
Norwood, MA 02062
Phone: (617) 440-1170 Fax: (617) 440-7083
International provider of microcomputer software, support and systems integration services for businesses and institutions. Services include software support, technical training, pilot implementations, consulting, software integration and migration management.

EDM Inc. 4075 Papazian Way, Ste 205, Fremont, CA 94538 (510) 438-9651 - VB, NT, SQL, PowerBldr., Conversions, Imaging.

G.A. Parks Consulting Group, Inc.
342 Madison Avenue, Suite 1430
New York, NY 10173
Phone: (212) 286-0777
Improve your existing investment. WFW, NT, Access, hardware, sales, support, service, design, full help desk support.

Indus Consultancy Services
140 E Ridgewood Ave
Paramus, NJ 07652
Phone: (201) 261-3100 Fax: (201) 261-1399
Indus Consultancy Services (ICS), the systems integrator of choice, will help you implement Distributed Databases, Client/Server, GUI and OO Systems. ICS specializes in Microsoft Windows NT, SQL Server, SMS, Access and Visual C++.

LANSystems Inc. - (800) ASK.4.LAN

Network Six, Inc.
475 Kilvert Street
Warwick, RI 02886
Phone: (401) 732-9000 Fax: (401) 732-9009
Providing systems integration services to government human services agencies, using information technology - including project management, systems design, software development, hardware procurement/installation, training, and data conversion.

Random Access, Inc.
8000 East Illil Avenue
Denver, CO 80231
Phone: (303) 745-9600 Fax: (303) 745-0242
Random Access is a leading provider of information technology solutions. Headquartered in Denver, Random Access has branch offices in Colorado Springs and Boulder, Seattle, Portland, Phoenix, Salt Lake City, Boise, Houston, Omaha and Minneapolis.

Systems Research and Applications Corporation
2000 15th St.,
No Arlington, VA 22201
Phone: (703) 803-1500 Fax: (703) 803-1509
SRA provides solutions for industry and government. Specific markets include health, manufacturing, legal and retail, with expertise in integration, telecommunications, networks, imaging, multimedia, full text-document management, and business reengineering.

Tech-Comm, Inc. LAN-MAN Network Experts
Birmingham, AL (205) 250-8053

Systems Integration/Messaging

Wordlink
2009 Fox Drive
Champaign, IL 61820
Phone: (217) 359-9378 Fax: (217) 373-6279
WORDLINK offers of complete set of networking, information integration and authorized education services designed for Microsoft solutions. WOROLINK has locations in Illinois, Indianapolis, Missouri and California.

Technical Training

Digital Equipment Corporation
129 Parker Street
Maynard, MA 01754
Phone: (800) 332-5656 Fax: (603) 884-6655
Come to us for a complete turnkey solution that includes registration, scheduling, and accounting, as well as course development delivery and testing. It's training at its best-in your best interest.

Meliora Systems, Inc.
95 Allens Creek Road, Building 2, Suite 302
Rochester, NY 14618
Phone: (716) 461-1900 Fax: (716) 461-1989, E-Mail: 70742,3173@Compuserve.com
As one of the country's premier Microsoft Solution Provider Partners and Authorized Technical Education Centers, Meliora Systems is a leading provider of consulting and training on Microsoft Office and BackOffice.

RRTC, Inc.
1-800-476-4454/Fax: 804-295-3291
Authorized Technical Education Center (ATEC). Microsoft certified training for support professionals. Washington, D.C. and Richmond, Virginia. On-site training available. Classes in NT, NT Server, SQL, SMS, Windows 95, Mail.
Serving Customers Nationwide

Training

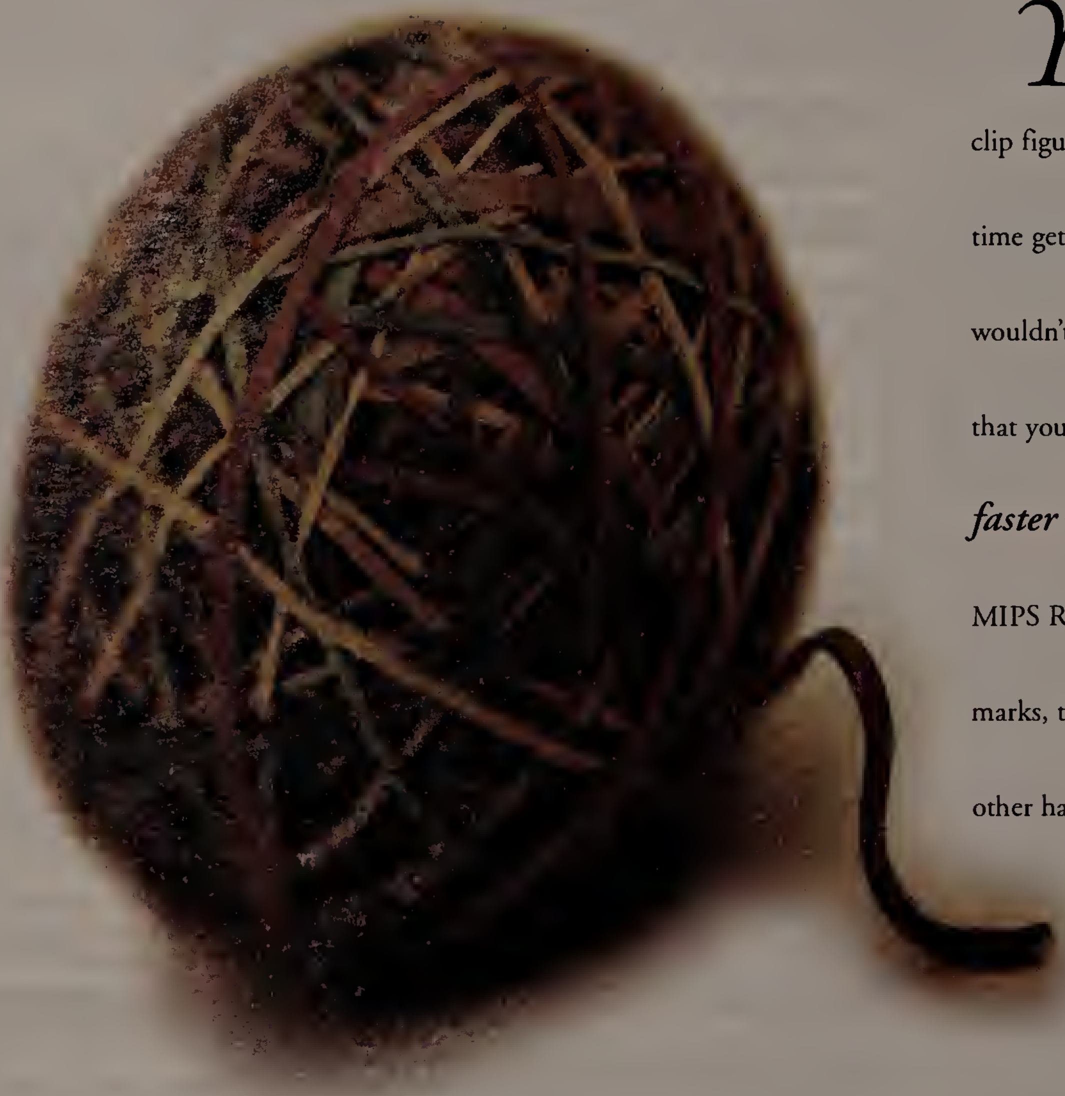
Computer Savvy, Inc., 2382 W Oakland Park Blvd., Ft. Lauderdale, FL 33311 Phone: (305) 486-0644; Fax: (305) 486-5659; PC Training Network Certificalion

Keystone Learning Systems Corp.
2181 Larsen Parkway
Provo, UT 84606
PH: 800-748-4838, 04 801-375-8680 FAX: 801-373-6872
We specialize in Video Training for your Entire Enterprise. Courses available for MS Office, VisualBasic, Project, Back Office, Windows and many more. Call today to start your Video Training Library.

MSU, Windows Training & Development Center, Houston, TX (713) 650-0333 Fax: (713) 650-0060.

Workgroup Automation

Kois & Associates, Inc
156 Fifth Avenue
New York, NY 10010
Phone: (212) 255-1956 Fax: (212) 255-1735
Specialists in workgroup automation & customization with all flavors of Windows (Workgroups, NT), MS apps (Word, Excel, Access, Mail), & MS BASICs (VB, WordBasic, VBA).



You could make rubber band balls for instance. Or little paper clip figurines. But why on earth would you want to spend more time getting less done at work? Well, the answer is you probably wouldn't. No one would. It's just that some people may not know that you can run Windows NT™ applications up to ***three times faster*** with a MIPS™ RISC-based system.* Or that you can also use MIPS RISC with UNIX. And that according to the TPC–C benchmarks, the ***top three OLTP systems*** use MIPS RISC. On the other hand, it may be that these people *do* know about all these things, and have just had trouble convincing other people. So if you find yourself in this position, and you think it might help, you could always tell them that you chose MIPS RISC because of its ***exceptional price/performance advantages.*** You might also tell them that you chose MIPS RISC because ***nearly a hundred companies*** have adopted its architecture and it's the ***number one RISC-based general purpose processor*** in production today. That usually works. But if not – if after all that, they still seem unsure – just remember that you still have your imagination. And there will always be plenty of office supplies.

You could run Windows NT *without* MIPS, *but there are more imaginative ways of wasting time.*

MIPS RISC

MICROSOFT™ WINDOWS NT COMPATIBLE

*Compared to a Pentium™-processor-based system

Copyright 1995 NEC Electronics Inc.
All trademarks are the property of their respective owners.

NEC

For more information call **1-800-366-9782** and ask for info pack #183.

Computerworld, Inc.

CEO/President Gary J. Beach

Executive Vice President: Steven F. Woit

Senior Vice President/Finance: Matthew C. Smith

Vice President/Human Resources: Susan C. Perry

Executive Assistant to the CEO/President Karen E. Elliott

Computerworld

An IDG Company: The World's Leader in Information Services on Information Technology

Publisher

Kevin McPherson

Computerworld Headquarters: 375 Cochituate Road, P.O. Box 9171, Framingham, MA 01701-9171 Phone: 508-879-0700, FAX: 508-875-4394

Vice-President Editorial Bill Laheris

Vice-President Sales/Associate Publisher David Peterson

Vice-President Marketing Boh Winter

Vice-President Consumer Marketing Gail Odeneal

PUBLISHER'S OFFICE: *Assistant to the Publisher,* Lois Beninati **SALES CLASSIFIED:** *Classified Operations Director,* Cynthia Delany **MARKETING:** *Director, Marketing Communications,* Mary Doyle, *Senior Manager, Marketing Communications,* Elizabeth Phillips, *Manager, Trade Show & Conventions,* Audrey Shohan, *Marketing Communications Account Manager,* Susan Thaxter, *Administrative Assistant,* Patty White **CIRCULATION:** *Director of Circulation Management,* Maureen Burke **PRODUCTION:** *Production Director,* Christopher P. Cuoco, *Production Manager,* Beverly Wolff **DISTRIBUTION:** *Distribution Manager,* Bob Wescott, *Traffic Manager,* Pat Walker **INFORMATION SYSTEMS:** *Vice-President of IS,* Walter Crosby

Sales Offices

Associate Publisher/Vice-President/Sales

David Peterson

Computerworld Headquarters: 375 Cochituate Road, P.O. Box 9171 Framingham, MA 01701-9171 Phone: 508-879-0700, FAX: 508-879-0446

Northeast

Regional Vice President: Sherry Driscoll, Senior District Managers: Bill Cadigan, John Watts, Sales Office Coordinator: Tammy Grynicwicz, Sales Assistants: Laura Holliday, Barbara Shuman, 470 Totten Pond Rd., 5th Floor, Waltham, MA 02154 (508) 879-0700 FAX: (617) 890-2669 TDD: (800) 428-8244

Mid-Atlantic

Seniur District Managers: Fred LoSapiu, Vicki Gonin, Rich Molden, Sales Assistants: Susan Kusnic, Jean Dellarobba, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 FAX: (201) 712-9786 TDD: (800) 208-0288

South-Atlantic

Regional Vice President: Bernie Hnckswender, Sales Assistant: Jennifer Pattenaude, 3675 Crestwood Parkway, Suite 400, Duluth, GA 30136 (404) 931-8104 FAX: (404) 931-8106 TDD: (800) 449-4974

Midwest

Senior District Manager: Sharon R. O'Brien, Sales Assistant: Denice Richards, 980 N. Michigan Avenue, Suite 1400, Chicago, IL 60611 (312) 214-3606 FAX: (312) 214-4962

Southwest

Senior District Manager: Darren Ford, Sales Assistant: Brenda Shipman, 14651 Dallas Parkway, Suite 304, Dallas, TX 75240 (214) 233-0882 FAX: (214) 701-9008 TDD: (800) 822-4918

Northern California

Vice-President Western Advertising Sales: Richard Espinoza, Senior District Managers: Ernie Chamberlain, Kaye Sharbrough, Linda Holbrook, District Managers: Christine Curry, Elizabeth Cooper, Lisa Kowalski, West Coast Operations Manager: Leticia Lehane, Sales Associates: Denise Hui, Emily Gaytan, Shannon Dempsey, Andrea Zurek, Jim Schott, Colleen Molnar, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 FAX: (415) 347-8312 TDD: (800) 900-3179

Southern California

District Manager: Nancy Coy, Sales Associate: Rachel Gillis-Swartz, 2171 Campus Drive, Suite 300, Irvine, CA 92715 (714) 250-3942 FAX: (714) 476-8724

Advertising Operations

Display Advertising Production Manager: Paula Wright, Display Advertising Coordinators: Lisa Tanner, Peggy Hennessy, Gregg Pinsky, (508)-879-0700 FAX: (508) 879-0446

Custom Publications

Boston: Vice President/Larry Craven, Director of Publishing Services/Carolyn Novack, Project Coordinator/Heidi Broadley, Managing Editor/Peter Bochner, Graphic Designer/Gail Varney, 375 Cochituate Road, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 FAX: (508) 879-0446

San Francisco: West Coast Director/Elaine R. Offenbach, Sales Associate/Nikki Wilson, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 FAX: (415) 347-8312

Client/Server Journal

Associate Publisher: James Hussey, 375 Cochituate Rd., Box 9171, Framingham, MA 01701-9171 (508) 879-0700 FAX: (508) 872-2364

East: John Watts, 470 Totten Pond Rd., 5th Floor, Waltham, MA 02154, (508) 879-0700 FAX (617) 890-2669

West: Lisa Kowalski, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 FAX: (415) 347-8312

Marketplace Advertising

Sales Manager/Michelle Reeves, **Central/Southeast** Account Executive/Kevin Gasper, **Western** Account Executive/Claude Garbarino, Marketing Communications Manager/Karen Lesko, Classified Solutions/Nancy Whittaker, 375 Cochituate Rd., Framingham, MA 01701-9171 (800) 343-6474 FAX: (508) 820-0941

Recruitment Advertising Sales Offices

Vice President/Recruitment Advertising/John Corrigan, Marketing Director/Derek E. Hulitzky, 375 Cochituate Rd., Framingham, MA 01701-9171 (800) 343-6474

New England: Regional Manager/Nancy Percival, 375 Cochituate Rd., Framingham, MA 01701-9171 (800) 343-6474, Account Executive/Nancy Mack, (800) 343-6474

Mid-Atlantic: Regional Manager/Marty Finn, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090, Account Executive/Caryn Dlott, (800) 343-6474 TDD: (800) 208-0288

South-Atlantic: Regional Manager/Katie Kress, 8304 Professional Hill Drive, Fairfax, VA 22031 (703) 573-4115, Sr. Account Executive/Pauline Smith (800) 343-6474

Midwest: Regional Manager/Pat Powers, 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (708) 827-4433, Sr. Account Executive/Ellen Cross (800) 343-6474 TDD: (800) 227-9437

West: Regional Manager/Barbara Murphy, 2171 Campus Drive, Ste. 100, Irvine, CA 92715 (714) 250-0164, Sr. Account Executive/Christopher Glenn (800) 343-6474 TDD: (800) 203-5867

Computer Careers Online: Jay Savell, Account Executive, 375 Cochituate Rd., Framingham, MA 01701-9171 (800) 343-6474

Direct Response Cards

375 Cochituate Rd., Framingham, MA 01701-9171 (800) 343-6474

Account Manager/Norma Tamburrino, Sales Associate/Christine McGovern, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090

Computerworld Database Division

Vice President/General Manager, Customer Information Division: Richard Mikita, Vice President Sales: John Carpenter, Sales Assistant: Jennifer Claus.

East: Account Executive VAR Datahase, Carol Mullen, Database Representative, Buyers Database, Linda Clinton, (508) 879-0700 FAX: (508) 879-0184

West: Account Executive VAR Database, Chris Jones, Database Representative, Buyers Database, Gena Haas, (415) 347-0555 FAX: (415) 347-8312

Response Technologies

President: Charles Coleman, Chief Operating Officer: Jaye Tyler, (508) 626-1700 FAX: (508) 626-0027, Internet: rti @ delphi.com, CompuServe: 74403,2745

International Data Group

Chairman of the Board, Patrick J. McGovern; **President,** Kelly Conlin; **Chief Operating Officer,** Jim Casella; **Vice President Finance,** Gene Gartlan

Computerworld is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 200computer publications in 63 countries. Forty million people read one or more International Data Group publications each month. International Data Group's publications include: ARGENTINA'S Computerworld Argentina, Infoworld Argentina; AUSTRALIA'S Computerworld Australia, Australian PC World, Australian Macworld, Network World, Mobile Business Australia, Publish!, Reseller, IDG Sources; AUSTRIA'S Computerwelt Oesterreich, PC Test, BELGIUM'S Data News (CW); BOLIVIA'S Computerworld; BRAZIL'S Computerworld, Gamepro, Game Power, Mundo Unix, PC World, Publish, Super Game; BULGARIA'S Computerworld Bulgaria, Edworld, PC & Mac World Bulgaria, Network World Bulgaria; CANADA'S CIO Canada, Computerworld Canada, Graduate Computerworld, InfoCanada, Network World Canada, Reseller; CHILE'S Computerworld Chile, Informatica; COLOMBIA'S Computerworld Columbia PC World; COSTA RICA'S PC World, CZECH REPUBLIC'S Computerworld, Elektronika, Macworld, PC World, DENMARK'S Communications World, Computerworld Danmark, LOTUS World, Macintosh Produktkatalog, Macworld Danmark, PC World Danmark, PC World Produktguide, Tech World, Windows World, ECUADOR'S PC World, EGYPT'S Computerworld(CW) Middle East, PC World Midde East; FINLAND'S Mikro PC, Tietoviikko, Tietoverkko; FRANCE'S Distributique, GOLDEN MAC, InfoPC, Languages & Systems, Le Guide du Monde Informatique, Le Monde Informatique, Telecoms & Reseaux, GERMANY'S Computerwoche, Computerwoche Focus, Computerwoche Extra, Computerwoche Karriere, Electronic Entertainment, Gamepro, Information Management, Macwelt, Netzwelt, PC Welt, PC Woche, Publish, Unit; GREECE'S Infoworld, PC Games; HONG KONG'S Computerworld Hong Kong, PC World Hong Kong, HUNGARY'S Computerworld SZT, PC World, INDIA'S Computers & Communications; INDONESIA'S Info Komputer; IRELAND'S ComputerScope; ISRAEL'S Computerworld Israel, PC World Israel, ITALY'S Computerworld Italia, Lotus Magazine, Macworld Italia, Networking Italia, PC Shopping Italy, PC World Italia; JAPAN'S Computerworld Today, Information Systems World, Macworld Japan, Nikkei Personal Computing, SunWorld Japan, Windows World; KENYA'S East African Computer News, KOREA'S Computerworld Korea, Macworld Korea, PC World Korea, LATIN AMERICA'S GamePro;p MALAYSIA'S Computerworld Malaysia, PC World Malaysia; MEXICO'S Compu Edicion, Compu Manufactura, Computacion/Punto de Venta, Computerworld Mexico, MacWorld, Mundo Unix, PC World, Windows; THE NETHERLANDS' Computer! Totaal, Computable (CW), LAN Magazine, MacWorld, Totaal "Windows"; NEW ZEALAND'S Computer Listings, Computerworld New Zealand, Network World, New Zealand PC World, NIGERIA'S PC World Africa, NORWAY'S Computerworld Norge, C/World, Lotusworld Norge, Macworld Norge, Networld, PC World Ekspress, PC World Norge, PC World's Produkt Guide, Publish & Multimedia World, Student Data, Unix World, Windowsworld; IDG Direct Response, PAKISTAN'S PC World Pakistan; PANAMA'S PC World Panama, PERU'S Computerworld Peru, PC World; PEOPLE'S REPUBLIC OF CHINA'S China Computerworld, China Infoworld, China PC & Communications Magazine, Computer Fan, PC World China, Electronics International, Electronics Today/Multimedia World, Electronic Product World, China Network World, Software World Magazine, Telecom Product World; PHILIPPINES' Computerworld Philippines, PC Digest (PCW); POLAND'S Computerworld Poland, PC World/Komputer; PORTUGAL'S Cerebro/PC World, Correio Informatico/Computerworld, MacIn, ROMANIA'S Computerworld, PC World, Telecom Romania; RUSSIA'S Computerworld-Moscow, Mir-PK (PCW), Sety (Networks); SINGAPORE'S Computerworld Southeast Asia, PC World Singapore; SLOVENIA'S Monitor Magazine; SOUTH AFRICA'S Computer Mail (CIO), Computing S.A., Network World S.A., Software World, SPAIN'S Advanced Systems, Amiga World, Computerworld Espana, Communicaciones World, Macworld Espana, NeXTWORLD, Super Juegos Magazine (GamePro), PC World Espana, Publish; SWEDEN'S Attack, ComputerSweden, Corporate Computing, Macworld, Mikrodatorn, Natverk & Kommunikation, PC World, Publishing & Design (CAP), Datalngenjoren, Maxi Data, Windows World, SWITZERLAND'S Computerworld Schweiz, Macworld Schweiz, PC Tip; TAIWAN'S Computerworld Taiwan, PC World Taiwan; THAILAND'S Thai Computerworld; TURKEY'S Computerworld Monitor, Macworld Turkiye, PC World Turkiye; UKRAINE'S Computerworld, UNITED KINGDOM'S Computing/Computerworld, Connexion/Network World, Lotus Magazine, Macworld, Open Computing/Sunworld, UNITED STATES' Advanced Systems, AmigaWorld, Cable in the Classroom, CD Review, CIO, Computerworld, Digital Video, DOS Resource Guide, Electronic Entertainment Magazine (E2), Federal Computer Week, GamePro, IDG Books, Infoworld, Laser Event, Macworld, Multimedia World, Network World, PC Letter, PCWorld, PlayRight, Power PC World, Publish, SWATPro, Video Event, VENEZUELA'S Computerworld Venezeula, PC World Venezuela, VIETNAM'S PC World Vietnam

Have a Problem With Your Computerworld Subscription?

We want to solve it to your complete satisfaction, and we want to do it fast. Please write to:
COMPUTERWORLD, P.O. Box 2043, Marion, Ohio 43305-2043.

Your magazine subscription label is a valuable source of information for you and us. You can help us by attaching your magazine label here, or copy your name, address, and coded line as it appears on your label. Send this along with yuur correspondence.

Address Changes or Other Changes to Your Subscription

All address changes, title changes, etc. should be accompanied by yuur address label, if possible, or by a copy of the information which appears on the label, including the coded line.

Your New Address Goes Here

Address shuwn: ☐ Home ☐ Business

Name

Company

Address

City State Zip

Name		
Title	**Company**	
Address		
City	**State**	**Zip**

Other Questions and Problems

It is better to write us concerning your problem and include the magazine label. Also, address changes are handled more efficiently by mail. However, should you need to reach us quickly the following toll free number is available: **1-800-669-1002** Outside U.S. call (614) 382-3322).

CompuServe members can reach us at account number 73373, 1230

Advertisers' Index

AT&T	22-23, 50, 60
Baan International	9
Bruno Blenheim Inc.	40
Btrieve	61
Cisco	46-47
Cognos	74-75
Computer Associates	3, 18-19
Compuware	10, 26-27
D&B Software	21
Dell	G1-G3
Digital Equipment Corp.	36
EMC Corp.	58
Exide Electronics	64-65
4th Dimension	24
Genicom	73
Gupta Corporation	71
Hewlett Packard	30-31, 42-43
IBM	55, 57, 89
Information Builders	62
Innovation Data Processing	7
Interface Group	114
IS Leadership	25
Micro Focus	11
Microsoft	38-39, 52-53
NEC Electronics	110
NEC Technologies	C4
Oracle	5
Platinum Technology	78-79, 81
Printronix	56
Santa Cruz Operation	44
SAS Institute	86-87
Seer Technologies	15
Softbank	76
Software AG	66
Speedware	48-49
Sprint	29
Sun Microsystems	17
Sybase	90
Unisys	68
Visiontek	C3
VMark	20
Watcom	13
World Expo Corp.	33

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

Marketplace Advertisers' Index
Pages 104-109

Alicomp	(800) 274-5556
American Software	(404) 264-5770
Boxlight	(800) 762-5757
Bridge Publishing	(800) 367-8788
Carlson Computer International	(800) 334-7073
Dempsey Business Systems	(800) 888-2000
Electronic Resource Recovery	(914) 427-2151
Faneuil Systems	(708) 574-3636
Frustum Group	(800) 548-5660
Keystone Learning Systems	(800) 748-4838
Knozall	(800) 333-8698
Panelight	(800) 726-[illegible]
Secure It	(800) 451-7592
Spectra Equipment	(800) 745-[illegible]
Stratagy	[illegible]

Companies in this issue

Page number refers to page on which story begins

3Com Corp. ... Cover1,6,56

A

A. T. Kearney Co. ... 32
Abbacor Ltd. ... 51
Abbot Laboratories ... 67
Aberdeen Group, Inc. ... 12,56
Adaptive Solutions, Inc. ... 41
Adobe Systems, Inc. ... 41
Advanced Micro Devices, Inc. ... 45
AirSoft, Inc. ... 8
Aiwa America, Inc. ... 41
Alcoa Fujikura Ltd. ... Cover1
AlliedSignal, Inc. ... 8
Amdahl Corp. ... 8
Ametek Aerospace, Inc. ... 95
America Online, Inc. ... 113
American Film Institute, Inc. ... 41
American Presidents Line Ltd. ... 63
Andersen Consulting ... 63,67
Angia Communications, Inc. ... 49
Answer Systems, Inc. ... 32
Apple Computer, Inc. ... 6,8,41
Applied Materials ... 77
Ascom-Timeplex, Inc. ... Cover1
Astra Merck, Inc. ... 67
AT&T Corp. ... Cover1,6,32,60
Automotive Industry Action Group ... 73

B

Baan Co. ... 32
Banyan Systems, Inc. ... 41
Bay Networks, Inc. ... 6
BBN Software ... 67
Bell Northern Research ... 95
Benchmarking Partners, Inc. ... 59
Berghell Associates ... 63
Berringer Manheim Corp. ... 67
BIS Strategic Decisions ... 8
BMC Software, Inc. ... 60
Borland International, Inc. ... 14,20,82
Boxer Software ... 41
Bristol-Myers Squibb ... 67
BT ... 32
Bunge Corp. ... 73
Burlington Coat Factory
Warehouse Corp. ... 63

C

Cabletron Systems, Inc. ... Cover1,56
Candle Corp. ... 60
Center for Responsive Law ... 16
Charles Schwab & Co. ... 2
Chemical Banking Co. ... 14
Chesapeake College ... 14
Chevron Canada Ltd. ... 77
Chicago Mercantile Exchange ... Cover1
Chipcom Corp. ... Cover1,56
Ciba-Geigy Ltd. ... 67
CIMI Corp. ... 2,6
Circuit City Stores, Inc. ... 24
Cisco Systems, Inc. ... 32
Citizen, Inc. ... 37
CNA Insurance ... 8
Combinet, Inc. ... 32
Commerce Clearing House, Inc. ... 7
Compaq Computer Corp. ... 8
Compex ... Cover1
CompuServe, Inc. ... 12,54
Computer Associates
International, Inc. ... 7,8
Computer Sciences Corp. ... 10,73
Computervision Corp. ... 8
Continental Grain Co. ... 2
Coopers & Lybrand ... Cover1
Cowen & Co. ... 113
Creative Strategies Consulting ... 37
CSC Consulting ... 67
Cylink Corp. ... 51

D

D. H. Brown Associates, Inc. ... 4
Dataquest, Inc. ... 2,24,28,63,82
Dell Computer Corp. ... 6
Deloitte & Touche ... 67
Delrina Corp. ... 10,49
Demand Technology, Inc. ... 24,28
Digital Equipment Corp. ... Cover1,8
... 12,41,60,64
Digital Instrumentation
Technology, Inc. ... 41
Diversified Pharmaceutical Services ... 67
Dream Quest Images ... 4

E

Eastern Municipal
Water District ... 37
Eastman Kodak Co. ... 45
Electro Wire Corp. ... Cover1
Electronic Data Systems Corp. ... 32
Eli Lilly & Co ... 67
Encore Video ... 49
EPM ... 95
Ericsson, Inc. ... Cover1
Ernst & Young ... 67,73
Euclid Associates, Inc. ... 104
Expersoft Corp. ... 64

F

FileNet Corp. ... 63
Fireman's Fund Insurance Co. ... 63
First Albany Corp. ... 6
FMS, Inc. ... 84

G

Gartner Group, Inc. ... 6,14,63,104
Gas Research Institute ... 4,28
General Motors Corp. ... 32
Great Western Bank ... 59
GRP ... 32

H

Healthsource, Inc. ... 77
Henry Ford Medical Center ... 67
Hewlett-Packard Co. ... 7,8,24,45,63,64
Hitachi Ltd. ... 64
Holiday Inn Worldwide ... 10
Hurwitz Consulting Group, Inc. ... Cover1,77

I

IBM ... 6,8,12,14,32,41,45,59,60
ICI Corp. ... 59
ICS Deloitte ... 59
IMC, Inc. ... 84
Infonetics Research Corp. ... 8
Information Builders, Inc. ... 60
Infotec Development, Inc. ... 45
Insignia Solutions, Inc. ... 41
Intel Corp. ... 4,12,41
Intergraph Corp. ... 4
International Data Corp. ... 6,7,12,28
... 32,54,59
Iona Technologies Ltd. ... 64
ITT Hartford Life ... 60

J

Jewels by Park Lane ... 4
JM Family Enterprises, Inc. ... 48

K

Kagan Telecom Associates ... Cover1
Knorr Associates ... 80
KPMG Peat Marwick ... 32

L

Legato Systems, Inc. ... 28
Legent Corp. ... 8
Lever Brothers Co. ... 12
LightWork Design ... 4
Links Technology Corp. ... 104
Livingston Enterprises, Inc. ... 8
Lockheed Corp. ... 8
Lotus Development Corp. ... Cover1,2,6
... 37,45,77,82

M

Magic Solutions, Inc. ... 49
McGladrey & Pullen ... 6
MCI Communications Corp. ... Cover1,8
Medco Containment Services, Inc. ... 67
Memorex Telex N.V. ... 59
Merchants National Bank ... 73
Merck & Co. ... 67
Mergent International, Inc. ... 48
Meta Group, Inc. ... 7,28,59
Micro Research Industries ... 2
Microsoft Corp. ... Cover1,2,4,7,8,10,12,14
... 20,37,41,45,49,54,63,77,82,104,113
Microtest, Inc. ... 49
MIR Enterprises, Inc. ... 8
Monsanto Co. ... 59
Morgan Stanley & Co. ... 7

N

N2K, Inc. ... 32
National Semiconductor Corp. ... 8
National Westminster Bank ... 12
Navistar International
Transportation Corp. ... 73
Netscape Communications Corp. ... Cover1,8
... 12,32,63,113
News Corp. ... 8
New Technology Solutions, Inc. ... 14
New York New Media Association ... 32
Nordstrom, Inc. ... 2
Northeast Consulting Resources, Inc. ... 63
Nova Southeastern University ... 77
Novell, Inc. ... 2,6,8,20,37,41,45,48,49,51
Nynex Corp. ... 32

O

Olicom, Inc. ... 2
On Technology Corp. ... 37
Oracle Corp. ... Cover1,8,24,60

P

Pacific Enterprises Corp. ... Cover1
Pacific Health Care Systems, Inc. ... 56
PanCanadian Petroleum Ltd. ... Cover1
ParcPlace Systems, Inc. ... 64
PCS Health Systems, Inc. ... 67
Pennzoil Co. ... 2
Performance Systems International ... 113
Platinum Technology, Inc. ... 32,60
Postmodern Computing, Inc. ... 64
Powersoft Corp. ... 10,14,28,41,67
Prodigy Services Co. ... Cover1,54
Professional Development
Group, Inc. ... 14,20

R

Recognition International, Inc. ... 63
Roxane Laboratories, Inc. ... 67

S

SAP AG ... 59
Sauer-Sundstrand Corp. ... 12
Sema Group ... 51
Sense8 Corp. ... 4
Sentra Health Systems ... 72
Sigma Imaging Systems, Inc. ... 63
Silicon Graphics, Inc. ... 4,28
SmithKline Beecham PLC ... 67
SoftTracks Software Research, Inc. ... 2,20
Software Publishers Association ... 95
Southern California Gas Co. ... Cover1
Spalding Worldwide Sports ... 28
Spicer Corp. ... 49
Sprint Corp. ... Cover1,32
Spyglass, Inc. ... 8,113
Starlight Networks, Inc. ... 6,28
Storage Technology Corp. ... 59
Sun Microsystems, Inc. ... 6,7,8,28,63
SunSoft, Inc. ... 4,12
Superbase, Inc. ... 80
Sybase, Inc. ... 67

T

Tadpole Technology, Inc. ... 41
Telebyte Technology, Inc. ... 51
TeleChoice, Inc. ... Cover1,6
Template Graphics Software, Inc. ... 4
Texas Commerce Bank ... 14
The Amerisure Cos. ... 28
The BusinessMedia Group, Inc. ... 37
The Catholic University of America ... 12
The Data Works Ltd. ... 77
The Registry, Inc. ... 63
Thomas Jefferson University ... 6
Time-Warner, Inc. ... 32
Tower Group ... 60
Tribeca Research, Inc. ... Cover1

U

U.S. Technologies, Inc. ... 6
UB Networks, Inc. ... 7
Union Bank ... 59
Union Carbide ... 8
UUNET Technologies, Inc. ... 113

V

Vanstar Corp. ... 8
Viescas Consulting, Inc. ... 84
Visio Corp. ... 37

W

Walker Richer & Quinn ... 12
Wang Laboratories, Inc. ... 4,12,63,73
Washington National Insurance Co. ... 28
Watcom, Inc. ... 10
Watermark Software, Inc. ... 63
Waters Corp. ... 2
Wearnes Peripherals International ... 41
Wellcome PLC ... 67
Wheat First Butcher Singer, Inc. ... 113
Wildfire Communications, Inc. ... 49

X

Xerox Corp. ... 4
Xylogics, Inc. ... 8

Y

Young & Rubicam, Inc. ... 32

Aug. 11 Stock Ticker

Gainers Losers

Percent

Gainers		Losers	
US Robotics	31.9	Rexon Inc. (L)	-46.2
Pinnacle Micro Inc. (H)	24.6	Group I Software	-26.1
Network Computing Devices (H)	18.3	Printronix Inc.	-19.2
Storage Technology	17.1	Lattice Semiconductor	-19.1
Comshare Inc. (H)	16.8	Systemsoft Corp.	-12.7
Creative Technologies Inc.	16.1	Merisel	-11.2
Software Publishing Corp.	15.4	Computer Network Tech.	-10.6
Computervision Corp.	15.2	Intelligent Electronics	-10.6

Dollar

Gainers		Losers	
US Robotics	7.75	Lattice Semiconductor	-7.19
Integrated Silicon Systems	5.25	Group I Software	-6.00
Sierra Semiconductor	5.25	Printronix Inc.	-6.00
Micron Technology	5.00	Digital Equipment Corp.	-2.38
Comshare Inc. (H)	4.50	Systemsoft Corp.	-2.13
Softkey International Inc.	4.50	Optical Data Systems Inc.	-2.00
Cisco Systems Inc.	4.38	PictureTel Corp.	-2.00
Storage Technology	4.25	Centigram Communications	-1.81

Netscape nets investors

Wall Street was paved with 5 million shares of **Netscape Communications Corp. (NSCP)** last week in an initial public offering (IPO) that earned the maker of Internet browsers gobs of cash.

While the Mountain View, Calif., start-up has only been in business a little more than a year and has yet to show a profit, its domination of the World Wide Web browser market share attracted a flood of investor interest.

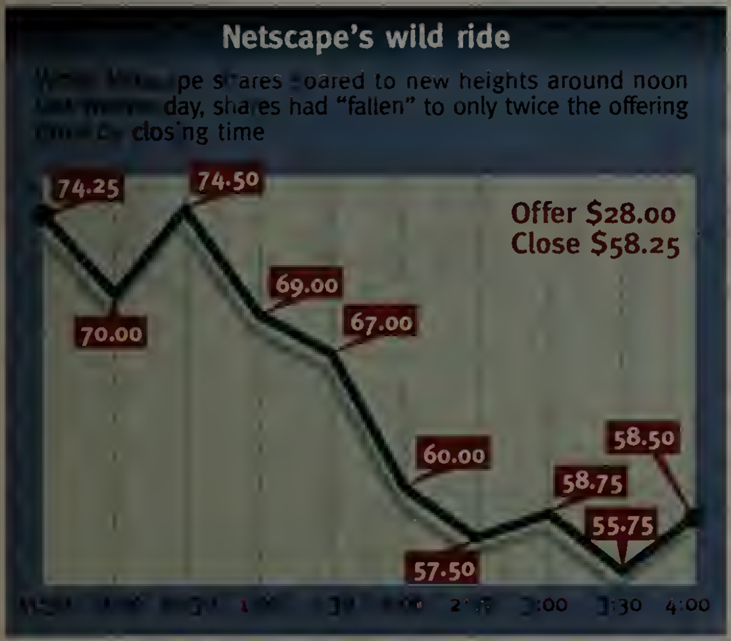
"People are looking for the next thing in the [Internet] frontier. They have a desire to own something Internet-related," said Maria Lewis, an analyst at Cowen & Co. in Boston. Other Internet-related IPOs from **Spyglass, Inc. (SPYG)**, **Performance Systems International (PSIX)** and **UUNET Technologies, Inc. (UNNT)** also received a lot of attention. However, the Netscape offering "was a singular phenomenon, a combination of name and product recognition with hype," Lewis said.

Competition

The challenge for Netscape will come from **Microsoft Corp.'s (MSFT)** Internet browser, which will ship with Windows 95 this month. But Netscape still has some pull.

For example, while **America Online, Inc. (AOL)** shares should have dropped after Microsoft was allowed to keep free access to The Microsoft Network in Windows 95, they have remained high, partly due to Netscape's lofty valuation, said Paul Sweeney, an analyst at Wheat First Butcher Singer, Inc. in Richmond, Va.

—Tim Ouellette and Stewart Deck



Communications and Network Services UP 0.16%

Exch	52-Week Range			Aug. 11 3pm	Wk Net Change	Wk Pct Change
OTC	79.00	24.63	3COM Corp.	70.50	-0.63	-0.9
NYS	49.38	38.00	AMERITECH Corp.	47.63	-0.88	-1.8
NYS	59.00	47.25	AT&T	51.50	-0.50	-1.0
OTC	74.00	9.88	Ascend Communications	70.50	-0.50	-0.7
OTC	19.75	10.00	Banyan Systems Inc.	11.25	-0.50	-4.3
OTC	48.25	23.13	Bay Networks Inc.	44.38	2.44	5.8
NYS	59.75	48.38	Bell Atlantic Corp. (H)	57.38	-1.00	-1.7
NYS	69.00	50.50	BellSouth Corp. (H)	65.75	-1.25	-1.9
NYS	39.38	12.63	Bolt, Beranek & Newman	35.88	-0.25	-0.7
OTC	22.25	9.00	Brooktrout Technology	19.50	-0.50	-2.5
NYS	59.63	37.38	Cabletron Systems	53.25	1.50	2.9
OTC	22.25	12.25	Centigram Communications	15.63	-1.81	-10.4
OTC	50.50	20.00	Chipcom Corp.	36.13	-0.13	-0.3
OTC	58.75	20.88	Cisco Systems Inc.	58.63	4.38	8.1
OTC	12.00	6.13	Compression Labs Inc.	8.13	-0.19	-2.3
OTC	12.75	5.63	Computer Network Tech.	7.88	-0.94	-10.6
OTC	14.50	7.50	CrossComm	10.75	-0.44	-3.9
OTC	4.50	2.13	Data Switch Corp.	4.31	0.00	0.0
OTC	55.50	22.00	DSC Communications	51.38	2.25	4.6
OTC	42.00	14.38	FORE Systems Inc.	34.63	1.13	3.4
NYS	35.88	9.25	General Datacomm Inds.	12.13	-0.63	-4.9
NYS	52.50	29.50	GTE Corp. (H)	35.75	0.00	0.0
NYS	121.88	77.00	ITT Corp.	117.00	-1.50	-1.3
OTC	25.88	17.25	MCI Commmunications Corp.	23.13	-0.38	-1.6
OTC	15.75	5.50	MICOM Communications Corp.	8.38	0.13	1.5
OTC	22.25	6.25	Microcom Inc.	20.00	1.31	7.0
OTC	10.50	4.00	Netrix Corp.	5.25	-0.50	-8.7
OTC	12.00	3.25	Network Computing Devices (H)	10.50	1.63	18.3
NYS	31.00	10.50	Network Equipment Tech.	31.00	1.50	5.1
OTC	36.13	15.25	Network General	32.75	-0.25	-0.8
NYS	43.38	27.00	Newbridge Networks Corp.	29.00	-0.50	-1.7
NYS	41.00	31.25	Northern Telecom Ltd.	36.63	-0.88	-2.3
OTC	23.25	13.75	Novell Inc.	18.13	-0.13	-0.7
NYS	44.75	35.63	Nynex Corp. (H)	43.63	0.50	1.2
OTC	39.25	17.75	Octel Communications Corp.	36.13	0.13	0.3
OTC	33.00	7.88	Optical Data Systems Inc.	28.75	-2.00	-6.5
OTC	6.00	2.13	Penril Data Comm Networks	4.50	-0.25	-5.3
OTC	62.00	13.75	PictureTel Corp.	54.38	-2.00	-3.5
OTC	8.13	2.13	Proteon Inc.	6.88	0.00	0.0
OTC	7.88	3.00	Racotek Inc.	6.00	0.13	2.1
OTC	6.75	3.50	Retix	4.00	0.00	0.0
NYS	24.88	17.50	Scientific Atlanta Inc.	21.38	1.13	5.6
NYS	50.13	39.25	Southwestern Bell Corp. (H)	49.00	-0.50	-1.0
NYS	40.13	25.88	Sprint Corp.	33.50	-0.50	-1.5
OTC	31.63	12.50	Standard Microsystems Corp.	17.25	0.00	0.0
OTC	57.50	16.00	Stratacom Inc.	51.25	0.63	1.2
OTC	8.13	3.63	Telebit Corp.	4.44	0.00	0.0
OTC	150.00	27.75	US Robotics	145.50	7.75	5.6
NYS	45.00	29.63	U S West Inc. (H)	42.63	-1.25	-2.8
OTC	23.50	9.13	Xircom	11.00	0.81	8.0
OTC	34.25	8.00	Xylogics Inc.	34.25	3.88	12.8

PCs and Workstations OFF 0.35%

Exch	52-Week Range			Aug. 11 3pm	Wk Net Change	Wk Pct Change
OTC	7.63	3.63	Advanced Logic Research	6.88	-0.38	-5.2
OTC	50.13	32.50	Apple Computer Inc.	42.63	-1.69	-3.8
OTC	19.25	10.38	AST Research Inc.	13.63	-1.50	-9.9
NYS	52.88	30.75	Compaq Computer Corp.	52.13	1.38	2.7
OTC	70.13	29.25	Dell Computer Corp.	69.50	2.25	3.3
OTC	30.38	13.56	Gateway 2000 Inc.	27.88	-0.25	-0.9
NYS	83.75	39.63	Hewlett Packard Co.	75.88	2.88	3.9
OTC	20.13	2.75	Micron International Inc.	18.50	-0.25	-1.3
NYS	45.63	23.38	Silicon Graphics	39.00	-0.88	-2.2
OTC	51.50	23.88	Sun Microsystems Inc.	48.00	1.56	3.4
NYS	60.63	38.50	Tandy Corp. (H)	60.63	3.50	6.1

Large Systems OFF 1.21%

Exch	52-Week Range			Aug. 11 3pm	Wk Net Change	Wk Pct Change
ASE	13.63	6.50	Amdahl Corp.	9.88	0.06	0.6
NYS	8.88	3.63	Convex Computer	4.75	0.00	0.0
NYS	74.38	14.63	Cray Research Inc.	23.38	-1.50	-6.0
NYS	12.00	6.75	Data General Corp.	10.25	0.88	9.3
NYS	49.50	20.38	Digital Equipment Corp.	41.75	-2.38	-5.4
OTC	5.56	1.06	Encore Computer Corp.	1.44	-0.13	-8.0
OTC	18.50	9.25	Harris Computer Systems Corp.	14.50	0.38	2.7
NYS	111.75	63.25	IBM	109.38	-0.25	-0.2
OTC	7.88	3.00	Meridian Data Inc.	6.63	-0.75	-10.2
OTC	12.25	4.25	NetFrame	5.63	-0.25	-4.3
OTC	22.75	14.13	Sequent Computer Sys.	22.75	1.38	6.4
OTC	10.00	3.13	Sequoia Systems Inc.	7.00	0.00	0.0
NYS	39.88	24.00	Stratus Computer Inc. (L)	24.00	-0.38	-1.5
NYS	19.75	12.00	Tandem Computers Inc.	12.63	-0.13	-1.0
OTC	7.63	3.38	TriCord Systems	3.63	-0.13	-3.3
NYS	13.63	8.25	Unisys Corp.	8.75	0.13	1.4

Software UP 0.66%

Exch	52-Week Range			Aug. 11 3pm	Wk Net Change	Wk Pct Change
OTC	66.50	27.25	Adobe Systems Inc.	58.63	1.63	2.9
OTC	6.00	2.50	American Software Inc.	5.63	0.13	2.3
OTC	33.00	9.75	Applix Inc.	27.50	0.25	0.9
OTC	50.25	24.63	Autodesk Inc.	47.25	2.25	5.0
OTC	7.88	1.88	Bachman Info. Systems	5.94	-0.56	-8.7
OTC	34.00	22.00	BGS Systems Inc.	32.50	-0.50	-1.5
OTC	83.25	41.00	BMC Software Inc.	76.75	2.50	3.4
OTC	31.25	16.88	Boole & Babbage	30.00	-0.38	-1.2
OTC	14.38	6.00	Borland Int'l Inc.	11.50	0.25	2.2
OTC	11.75	5.75	Brock Control Systems Inc.	8.50	-0.75	-8.1
OTC	3.75	1.78	CE Software	2.31	0.13	5.7
ASE	20.38	8.75	Cheyenne Software Inc.	20.38	1.88	10.1
OTC	32.63	10.50	Cognos Inc.	32.56	0.44	1.4
NYS	77.50	37.50	Computer Associates	74.00	0.38	0.5
NYS	11.38	2.50	Computervision Corp.	11.38	1.50	15.2
OTC	49.25	21.50	Compuware Corp.	23.38	-0.88	-3.6
OTC	31.25	9.00	Comshare Inc. (H)	31.25	4.50	16.8
OTC	19.50	10.13	Corel Corp.	18.38	0.25	1.4
OTC	16.25	8.00	Dataware Technologies Inc.	13.94	0.19	1.4
OTC	46.00	17.50	FileNet Corp.	43.63	1.13	2.6
OTC	8.75	3.38	4th Dimension	7.25	-0.13	-1.7
OTC	33.00	10.50	Frame Technology	30.13	1.38	4.8
OTC	35.50	14.88	FTP Software Inc.	23.25	-1.00	-4.1
OTC	26.00	8.00	Group I Software	17.00	-6.00	-26.1
OTC	13.88	8.25	Gupta	8.75	-0.38	-4.1
OTC	12.00	4.63	Hogan Systems Inc.	11.38	-0.38	-3.2
OTC	53.75	24.25	Hyperion Software Corp.	49.50	1.25	2.6
OTC	18.63	11.25	Information Resources	12.88	-0.13	-1.0
OTC	32.38	9.88	Informix Corp.	29.63	2.38	8.7
OTC	14.38	7.38	Intergraph Corp.	11.25	0.00	0.0
OTC	10.63	2.88	Interleaf Inc.	9.25	0.00	0.0
OTC	26.25	11.00	Intersolv Inc.	24.63	0.38	1.5
OTC	90.25	35.25	Intuit Inc. (H)	88.50	-0.25	-0.3
OTC	48.25	20.75	Legent Corp.	47.88	0.13	0.3
OTC	11.50	3.63	Magic Software Enterprises	11.00	0.13	1.1
OTC	16.50	6.75	Manugistics Group Inc.	15.75	0.63	4.1
OTC	40.00	14.75	MapInfo Corp.	22.75	0.25	1.1
OTC	7.38	1.44	MathSoft (H)	6.50	-0.25	-3.7
OTC	42.00	8.00	McAfee Associates	38.00	0.25	0.7
OTC	19.88	9.38	Mentor Graphics	17.88	-0.75	-4.0
OTC	16.53	10.75	Micro Focus	11.50	-0.38	-3.2
OTC	10.63	5.00	Micrografx Inc. (H)	9.13	0.19	2.1
OTC	109.25	52.75	Microsoft Corp.	95.25	2.75	3.0
OTC	22.50	7.50	NetManage Inc.	17.75	-0.13	-0.7
OTC	44.00	24.75	Oracle Corp.	40.50	0.13	0.3
OTC	58.50	24.25	Parametric Technology (H)	57.00	-0.50	-0.9
OTC	24.25	7.88	ParcPlace Systems Inc.	9.25	-0.75	-7.5
OTC	76.50	19.00	PeopleSoft	66.75	1.13	1.7
OTC	12.88	4.88	Phoenix Technologies	11.63	0.63	5.7
OTC	16.88	5.88	Platinum Software	14.88	-0.13	-0.8
OTC	25.25	13.50	Platinum Technology	22.50	-1.25	-5.3
OTC	59.50	29.50	Progress Software Corp.	53.75	0.75	1.4
OTC	17.50	1.94	Quarterdeck Corp. (H)	16.25	1.25	8.3
OTC	26.75	10.13	Rainbow Technologies Inc.	24.50	1.75	7.7
OTC	8.38	2.00	RasterOps (H)	7.50	-0.25	-3.2
OTC	7.00	3.00	Ross Systems	6.63	0.38	6.0
OTC	47.25	12.00	Softkey International Inc.	47.25	4.50	10.5
OTC	6.25	2.88	Software Publishing Corp.	3.75	0.50	15.4
OTC	12.50	5.25	State of the Art	8.00	-0.13	1.6
NYS	42.13	26.75	Sterling Software Inc.	41.00	0.38	0.9
OTC	15.00	4.63	Struct. Dynamics Research	14.06	1.13	8.7
OTC	55.00	19.88	Sybase Inc.	33.13	-1.75	-5.0
OTC	30.25	11.38	Symantec Corp. (H)	28.75	1.81	6.7
OTC	67.25	36.50	SynOpsys	58.63	-1.13	-1.9
OTC	30.00	10.63	System Software Assoc.	24.00	-0.13	-0.5
OTC	18.13	5.50	Systemsoft Corp.	14.63	-2.13	-12.7
OTC	8.13	3.25	Trinzic Corp.	7.50	-0.38	-4.8
OTC	24.00	7.88	ViewLogic Systems	12.38	-0.63	-4.8
OTC	22.00	10.75	VMark Software Inc.	15.00	0.38	2.6
OTC	10.75	4.63	Walker Interactive Systems	6.38	-0.50	-7.3
OTC	55.50	15.00	Wall Data Inc.	18.50	-0.50	-2.6
OTC	19.50	9.13	Wang Laboratories Inc.	18.00	0.13	0.7

Semiconductors UP 3.35%

Exch	52-Week Range			Aug. 11 3pm	Wk Net Change	Wk Pct Change
NYS	67.50	22.25	Advanced Micro Devices	33.25	1.25	3.9
NYS	37.88	18.88	Analog Devices Inc.	36.75	3.13	9.3
OTC	35.13	11,88	Atmel Corp. (H)	32.13	-0.06	-0.2
OTC	15.50	3.63	Chips and Technologies	13.38	-0.25	-1.8
OTC	48.50	10.50	Cirrus Logic	44.38	0.38	0.9
NYS	55.25	15.00	Cypress Semiconductor Corp.	50.13	1.63	3.4
NYS	222.00	13.38	Dallas Semiconductor	23.00	0.38	1.7
OTC	48.50	20.25	Integrated Silicon Systems	46.00	5.25	12.9
OTC	78.38	28.75	Intel Corp.	65.88	3.50	5.6
NYS	49.88	14.00	LSI Logic Corp.	46.75	2.50	5.6
OTC	43.00	15.50	Lattice Semiconductor	30.44	-7.19	-19.1
NYS	64.75	15.25	Micron Technology	63.25	5.00	8.6
NYS	80.13	49.00	Motorola Inc.	76.13	1.00	1.3
NYS	31.25	14.38	National Semiconductor	27.00	1.88	7.5
OTC	48.25	9.00	Sierra Semiconductor	48.25	5.25	12.2
NYS	159.75	63.38	Texas Instruments	148.88	3.13	2.1
OTC	33.63	10.25	VLSI Technology	28.63	0.13	0.4
OTC	5.25	1.78	Weitek	4.38	0.13	2.9
ASE	21.75	13.13	Western Digital Corp.	20.25	1.50	8.0
OTC	127.13	37.25	Xilinx	117.13	0.25	0.2
OTC	54.13	37.38	Zilog Inc.	45.13	2.13	4.9

Peripherals and Subsystems UP 0.93%

Exch	52-Week Range			Aug. 11 3pm	Wk Net Change	Wk Pct Change
OTC	25.88	14.38	American Power Conversion	16.50	-0.13	-0.8
OTC	45.50	17.25	Adaptec Inc. (H)	43.63	1.38	3.3
OTC	27.25	14.75	BancTec Inc.	17.63	0.50	2.9
OTC	13.13	3.38	Cambex Corp.	11.50	-0.88	-7.1
ASE	5.94	1.38	Cognitronics Corp.	5.94	1.44	31.9
NYS	14.63	9.00	Conner Peripherals	13.25	0.13	1.0
OTC	20.00	5.88	Creative Technologies Inc.	8.13	1.13	16.1
OTC	13.13	3.50	Data Race Inc.	10.63	0.00	0.0
ASE	8.13	4.25	Dataram Corp.	8.13	0.63	8.3
NYS	27.38	14.13	EMC Corp.	20.00	-0.75	-3.6
OTC	28.50	7.50	Emulex Corp.	25.75	-0.63	-2.4
OTC	18.50	11.25	Evans & Sutherland	18.50	2.00	12.1
OTC	24.00	11.75	Exabyte	15.50	0.63	4.2
OTC	4.75	1.88	Intelligent Info. Systems	3.19	-0.31	-8.9
OTC	30.00	2.31	Iomega Corp.	27.31	-0.06	-0.2
OTC	7.88	2.00	IPL Systems Inc.	7.44	0.69	10.2
OTC	69.63	20.75	Komag Inc.	65.00	-1.25	-1.9
OTC	7.25	2.63	Maxtor Corp.	4.75	0.13	2.7
OTC	11.50	4.00	Micropolis Corp.	6.25	-0.31	-4.8
OTC	20.88	8.75	Pinnacle Micro Inc. (H)	20.88	4.13	24.6
OTC	38.75	9.13	Printronix Inc.	25.25	-6.00	-19.2
NYS	10.75	4.00	QMS Inc.	4.38	-0.25	-5.4
OTC	27.63	13.75	Quantum Corp.	24.38	-0.88	-3.5
OTC	15.00	7.38	Radius Inc.	9.13	-0.25	-2.7
NYS	10.38	6.38	Recognition International	9.88	-0.13	-1.3
OTC	7.00	1.38	Rexon Inc. (L)	1.75	-1.50	-46.2
OTC	46.00	22.88	Seagate Technology	44.13	1.25	2.9
NYS	38.88	17.88	Storage Technology	29.13	4.25	17.1
NYS	52.38	30.50	Tektronix Inc.	46.13	-0.75	-1.6
NYS	125.88	90.63	Xerox Corp.	118.75	-0.25	-0.2

Services OFF 0.80%

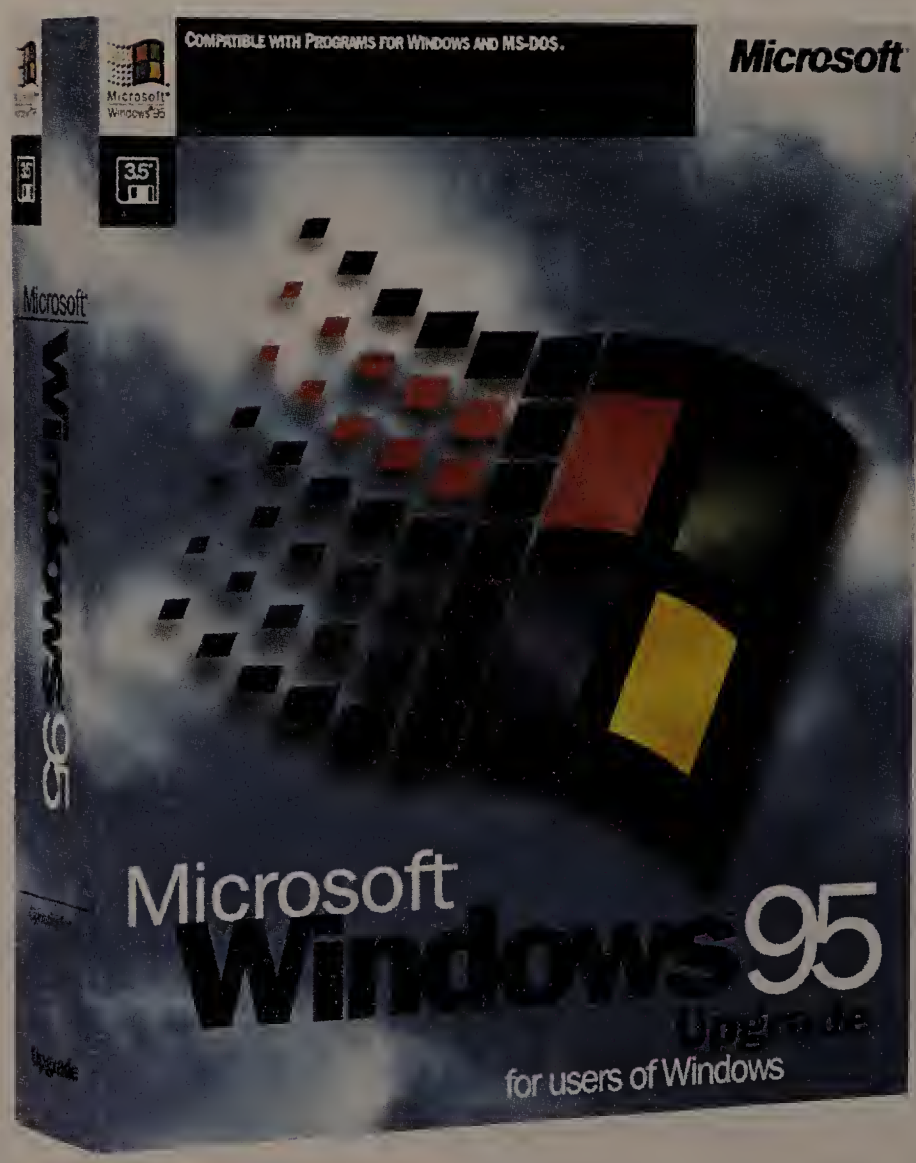
Exch	52-Week Range			Aug. 11 3pm	Wk Net Change	Wk Pct Change
OTC	27.00	14.38	American Mgmt. Systems	24.00	-0.75	-3.0
NYS	3.38	0.56	Anacomp Inc.	0.88	0.00	0.0
OTC	28.00	14.50	Analysts Int'l	27.25	0.38	1.4
NYS	66.00	36.75	Auto Data Processing	65.13	0.38	0.6
OTC	36.25	14.00	Cambridge Tech. Partners	33.50	-0.50	-1.5
NYS	43.50	23.50	Ceridian Corp.	40.88	0.00	0.0
NYS	32.50	19.38	Comdisco Inc.	31.75	-0.13	-0.4
OTC	21.00	6.63	Computer Horizons	19.13	-0.88	-4.4
NYS	61.50	40.00	Computer Sciences	58.75	1.13	2.0
NYS	16.00	7.50	Computer Task Group	14.13	-0.38	-2.6
NYS	36.38	6.75	CompUSA Inc. (H)	35.13	1.63	4.9
OTC	10.75	5.38	Control Data Systems Inc.	9.38	0.31	3.4
OTC	14.25	6.25	Egghead Discount Software	12.63	0.88	7.4
NYS	47.50	34.75	General Motors E (EDS) (H)	46.25	2.50	5.7
OTC	15.25	6.88	Inacom Corp.	13.75	0.25	1.9
OTC	18.13	7.50	Intelligent Electronics	11.63	-1.38	-10.6
OTC	11.25	3.88	Merisel	6.44	-0.81	-11.2
OTC	15.88	8.50	Microage Inc.	12.38	-0.50	-3.9
OTC	40.00	21.13	Paychex	38.38	0.88	2.3
NYS	53.88	33.25	Policy Management Sys.	51.75	-0.50	-1.0
NYS	33.50	22.25	Reynolds and Reynolds	31.00	0.38	1.2
OTC	24.50	16.75	SEI Corp.	22.25	0.75	3.5
OTC	42.75	23.13	Shared Medical Systems	39.13	-1.13	-2.8
OTC	8.13	4.00	SHL Systemhouse	6.88	-0.56	-7.6
OTC	26.50	12.00	Software Spectrum Inc.	24.00	-0.50	-2.0
OTC	31.75	16.50	SunGard Data Systems	28.75	-1.25	-4.2

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

Copyright Nordby International Inc., Boulder, Colorado
This information is based on sources believed to be reliable, and while extensive efforts are made to assure its accuracy, no guarantees can be made. Nordby International and Computerworld assume no liability for any inaccuracies. For information on Nordby's customized financial research services, call 1 (800) 926-7404.

Second-class postage paid at Framingham, Mass., and additional mailing offices. Posted under Canadian International Publication agreement #D385697. Computerworld (ISSN 0010-4841) is published weekly: except a single combined issue for the last week in December and the first week in January by Computerworld, Inc., 375 Cochituate Road, Box 9171, Framingham, Mass. 01701-9171. Copyright 1995 by Computerworld, Inc. All rights reserved. Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N. Zeeb Road, Ann Arbor, Mich. 48106. Back issues, if available, may be purchased through the circulation department. Photocopy rights: permission to photocopy for internal or personal use is granted by Computerworld, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3.00 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress Street, Salem, MA 01970. Reprints (minimum 500 copies) and permission to reprint may be purchased from Sharon Bryant, Computerworld, Inc., 375 Cochituate Road, Box 9171, Framingham, Mass. 01701-9171. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $6.00 a copy: U.S. — $48 a year; Canada — $110 a year; Central & So. America — $150 (surface) a year; Europe — $295 a year; all other countries — $295 a year. Subscriptions call toll free (800) 669-1002. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, P.O. Box 2044, Marion, OH 43305.

The First Event Out of the Box.



This is what you've been waiting for...and now it's here. Be there when Windows® 95 comes out of the box at the largest Windows event in the Southwest. Visit the WINDOWS WORLD Solutions Pavilion for the latest solutions in Windows 95, Windows NT,™ and Plug and Play technology. Participate in the WINDOWS WORLD I-Way, including the Internet Experience. And attend the conference for a new world of Windows solutions.

WINDOWS WORLD/Dallas ON-LINE REGISTRATION AND INFORMATION

Go on-line today to register for
WINDOWS WORLD/Dallas '95
or for the latest information on exhibiting companies,
conference speakers, and more!

INTERNET

World Wide Web URL:
http://www.winworld.com:8020

OR REGISTER BY FAX!

Call 617-449-5554, enter code 24,
and have your fax number ready.
We'll fax your registration form within 24 hours.

WINDOWS WORLD® ™
Dallas '95

The Official Conference and Exposition for Windows Computing. Produced in cooperation with Microsoft Corporation.

September 12–14, 1995 • Dallas Convention Center • Dallas, Texas

Plus FREE Admission to NETWORKS EXPO Dallas '95!

©1995 SOFTBANK COMDEX Inc. • 300 First Avenue • Needham, MA 02194-2722 USA • 617-449-6600
WINDOWS WORLD and Windows NT are trademarks of Microsoft Corporation and Windows and the Windows logo are registered trademarks of Microsoft Corporation. WINDOWS WORLD and the Windows logo are used by SOFTBANK COMDEX under license from Microsoft. NETWORKS EXPO is a registered service mark of and is produced and managed by BLENHEIM GROUP USA, Inc.
All brand names and products are trademarks of their respective holders. *WD 8216-2 6/95*

People issues plague IS

CONTINUED FROM COVER 1

tise it needs to design and develop business-specific Notes-based applications for 70,000 tax, audit and other staffers in 125 countries around the world.

"But what we're missing are collaborative skills and change management skills," said Ellen Knapp, Coopers & Lybrand's Washington-based vice chairman of technology. As a result, resistance to new systems can run high, which translates to longer deployment times.

Advice Column

Tips for managers grappling with IS people issues

- Tie bonus pay to preparedness for the future, not past performance
- Cruise the Internet to recruit smart technology people who thrive on change. That is where they hang out.
- Ditch conventional notions of what IS people look like and how they behave. Some of the best and brightest may also prefer to go shoeless, read comic books or do crossword puzzles at their desk.
- Learn to recognize the warning signs of depression among developers. One of the first to surface is excessive negativity.
- Don't overwhelm developers with new technology training. Introduce concepts one at a time.
- Don't let user demands distract developers from training.

Over and over, IS and business managers told the same story at last week's client/server conference here, sponsored by Hurwitz Consulting Group, Inc.

> **"We launched intensive [object-oriented] training of 15 days over a six-week period, and it left people looking like they'd been hit on the head with a club."**
>
> **— Roger Coates, technology group coordinator, PanCanadian Petroleum Ltd., Alberta, Canada**

"The human factor issues have never been more prevalent," said Judith Hurwitz, president of the Newton, Mass., consultancy. "What's holding organizations back are the people issues and the political infighting that goes on. If you don't focus on these issues, no matter what you buy or build, it will be wrong."

As some see it, many of the political problems can be traced to — and remedied by — upper management, which continually dispatches mixed messages to the professional ranks.

On one hand, companies want to foster cross-functional teams, implement distributed computing and prepare for the future. Yet they continue to pay managers based on their number of direct reports. Most also tie bonus pay to workers' past performance rather than their readiness for the future.

Another common management pitfall is failing to understand that major change takes an enormous emotional toll on developers and other IS staffers.

"Cobol and other mainframe developers get depressed because their sense of worth as professionals goes way down when a company switches to objects," said Jason Ray, director of IS at Compex, an El Segundo, Calif., company that prepares and manages documents for law firms.

But it often is in the midst of this depression that companies bombard developers with intensive training in new technology — another misguided move.

"We launched intensive [object-oriented] training of 15 days over a six-week period, and it left people looking like they'd been hit on the head with a club," said Roger Coates, technology group coordinator at PanCanadian Petroleum Ltd. in Alberta, Canada.

Now, Coates said, PanCanadian has adopted a mentoring approach under which experienced hands-on developers train IS staffers "one new concept at a time." The firm is building 30 object-based systems related to oil and gas exploration.

Can we talk?

IS managers said most traditional IS staffers also require extensive training in communications skills, a prerequisite for developing cross-functional, enterprisewide systems.

Compex began building object-based systems in 1988. To hone developers' collaborative and communications skills, developers participated in what he calls joint "imagineering." This includes exercises similar to those used by athletes who imagine themselves executing flawless routines.

& **IS managers** battle training time constraints. See page 28.

Network saves lives

CONTINUED FROM COVER 1

said. "The 911 Emergency network would have equipped them with information about the alleged perpetrator's prior offenses, and they might be alive today."

The system will let dispatchers quickly transmit detailed historical and event data to police officers responding to emergencies and crimes in progress.

The new network will also link firefighters and emergency medical service technicians to help them respond to emergencies in record time — potentially saving dozens of civilian and law enforcement lives a year, said 911 project coordinator Bill Corbett.

Rescue 911

Once every six seconds someone phones Chicago's 911 Emergency Service number. The city's new 911 Emergency network will be able to accommodate 6.5 million calls a year, nearly 30% more than the 5.1 million 911 calls it logged under the old manual system last year.

Split-second response

Once operational, the network will ensure that 99% of the telephone calls to Chicago's 911 Emergency number are answered within "one or two rings, with most calls [connected] in 1.2 seconds," Corbett said. Under the current manual system, only 60% of 911 calls are answered in two rings, and the calls take an average of three times as long to be processed.

"In an emergency situation, every minute or second is crucial. A fast response could mean the difference between life or death," said Corbett, a 31-year police veteran.

This state-of-the-art secure communications network will use 155M bit/sec. and 655M bit/sec. Synchronous Optical Network (Sonet) backbones. Chicago will implement the network in stages, beginning next month. Sonet is the standard for high-speed data transmission over fiber-optic cable and is widely deployed by national carriers such as AT&T Corp., Sprint Corp. and MCI Communications Corp.

Providing the links between the emergency dispatchers and administrative personnel are 185 Ascom-Timeplex, Inc. routers, Digital Equipment Corp. Unix-based workstations and Microsoft Corp.'s Windows NT Server 3.51, which will connect 215 firehouses, police stations and public safety facilities.

The Madison Avenue 911 Emergency headquarters is the hub for the network's 176 miles of fiber-optic cable, which is owned by the city. The Ascom-Timeplex routers link more than 100 911 Emergency dispatchers, 13,000 police officers and 4,500 firefighters throughout the city at T1 speeds, Corbett said.

The city settled on Ascom-Timeplex Access routers and multiplexers not only for their high speed but also for their built-in redundancy and ability to meld a variety of disparate network protocols, Corbett explained.

But Chicago went above and beyond what came in the box and built in six layers of redundancy, the level officials say they need to ensure near 100% uptime.

Full speed ahead

Another advantage of the Ascom-Timeplex routers and multiplexers is that the devices use the company's Express Routing software. This software allows the Chicago 911 Emergency network to prioritize the various data traversing the network to deliver maximum bandwidth with the least amount of overhead, Corbett said.

"It's like putting a police cruiser on a straight empty highway going 120 miles per hour," he said.

The 108 emergency dispatchers at headquarters will also use Digital Unix Computer-Aided Dispatch workstations that access electronic databases containing detailed maps of city streets and buildings.

The administrative network uses the Windows NT Server 3.51 network operating system, which was chosen for its ability to handle large Oracle Corp. databases. Among those databases are administrative and personnel information.

Answering the call

▶ **Telephone calls** to the 911 Emergency Communications Center are routed through the 176-mile, city-owned fiber-optic Integrated Services Digital Network — connecting callers in 1.2 seconds (the fastest response in the nation) to one of 108 Emergency 911 dispatchers. The city has pledged that 99% of the calls will be answered on the first or second ring.

▶ **Once the call is logged**, or answered, the caller's address and phone number are displayed on a PC based on Digital Unix-based workstations. The 911 operator verifies the information and transfers the call to the appropriate police or fire dispatcher.

▶ **The network setup** includes individual command center consoles for each of the 108 dispatchers. The 911 dispatchers use Oracle databases attached to Unix workstations to call up detailed graphical maps of any street and building throughout Chicago.

▶ **The maps** give dispatchers instant access to exact street locations, best routes and detailed building descriptions such as entrances, closest cross street, nearest fire hydrant, owner's name and whether the property contains hazardous materials.

In the case of domestic disturbance, dispatchers can tell the police if the suspect has a prior criminal record. The dispatchers also have separate computer screens displaying phone numbers and addresses of all municipal and government agencies. They simply touch the display screen and the network will automatically dial the appropriate agency.

▶ **Information** is then transmitted via the Ascom-Timeplex routers attached to the fiber-optic backbone to computer terminals in police squad cars and fire engines and individual handheld devices carried by officers, firefighters and other Emergency Service personnel. — *Laura DiDio*

Jailhouse takes away prisoners' cash; IBM runs disk head dash

The Los Angeles County Sheriff's Department runs a network of 10 jails with 20,000 prisoners. Until recently, inmates had the right to carry small amounts of cash for food, cigarettes and supplies.

Although they were supposed to be limited to $40, some managed to carry hundreds of dollars. Some inmates bought drugs or other contraband. Some robbed other inmates. The presence of cash generated a level of crime inside prison walls that was difficult to control.

The Sheriff's Department responded with a computerized debit/credit system, with prisoners wearing bar-coded ID bracelets. The system was designed as a wireless, mobile system that tied laptops into seven Windows NT servers running SQL Server.

IBM says it'll offer 1.2G bytes per square inch of disk by the end of the century.

Charles Babcock

The cashless system is now functioning as planned and has significantly reduced petty crime inside the prisons, said Dwayne Walker, speaking at Windows World/Enterprise Computing Solutions in Chicago recently. The system was built by Integra Technology International, Inc., the Bellevue, Wash., firm that Walker founded in March. He was Microsoft's first Windows NT marketing manager. His 100-employee firm is specializing in providing tools for developing mobile NT applications.

*****

A few days after Walker described the L.A. jail system, an Oracle official hosting a briefing in Redwood Shores, Calif., described it in much the same terms, but with a twist. The L.A. jail system "was described as dealing with transactions involving hundreds of dollars a day," said Jerry Held, Oracle senior vice president, with a superior chuckle. He was suggesting that SQL Server can't scale up to the big leagues with transactions in the millions of dollars. That gives you some idea of whom Oracle worries about as competition.

*****

IBM is firmly nixing the prospect that it will be supplying advanced disk drive heads to other manufacturers in the foreseeable future. At one time it sounded as though IBM would be one of the few suppliers of magnetoresistive heads (MR) [CW, July 31]. When it had none to offer, competitors speculated it was having trouble ramping up its yields of wafer/transducer assemblies.

Bob Scranton, director of recording heads at IBM's Storage Systems Division in San Jose, Calif., said IBM has been on a learning curve since it first started production in 1991 but it is now getting higher sustained yields of MR heads than it did of predecessor inductive heads.

The learning curve is steep, and it takes a big investment by anyone to gain the manufacturing expertise, Scranton said. IBM has shipped 11 million MR hard drives using a total of 50 million MR heads, "most of them in the past year," he said. Even though IBM will continue to increase production, Scranton said the company's disk drive business is growing fast and he said he expects to consume all the MR parts it can produce.

MR is a promising technology, yielding 60% gains in data capacities a year. Scranton says IBM has demonstrated in the lab an ability to store 3G bits per square inch of MR drive platter. It plans to supply giant MR drives that store 10G bits (1.2G bytes) per square inch by the end of the century. That's the equivalent of 624,375 double-spaced, typewritten pages or 1,237 average-size novels.

*****

The Systems Management Server part of BackOffice, the Microsoft software server suite to manage PCs and communications, has an Autodiscovery feature that is supposed to identify the type of PC on a network, its resources and applications. To the surprise of Larry Bobbitt, a consultant at Andersen Consulting in Detroit, Autodiscover could not recognize the CD-ROM and hard drive of his recent model Compaq after he installed a version of BackOffice at home. It also didn't recognize non-Microsoft applications, leading Bobbitt to conclude Autodiscover couldn't discover very much. He was working with the first release of Systems Management Server, and the version now being released recognizes many more PCs and applications, Microsoft's John Wilcox said.

Babcock is *Computerworld*'s technical editor. His Internet address is cbabcock@cw.com.

How to contact *Computerworld* editors:

	PHONE:	**FAX:**
Main office, Framingham, Mass.	(508) 879-0700	(508) 875-8931
Mid-Atlantic bureau, Rochelle Park, N.J.	(201) 587-0090	(201) 712-1808
Washington bureau, Washington	(202) 347-0134	(202) 347-2365
Southwest bureau, Fort Worth, Texas	(817) 924-5485	(817) 924-5487
West Coast bureau, Burlingame, Calif.	(415) 347-0555	(415) 347-6831
Northwest bureau, Bellevue, Wash.	(206) 641-7770	(206) 747-1021

☞ **ELECTRONIC MAIL:** Writers and editors have individual **Internet** accounts. Address messages to first initial and last names as they appear on the staff listing, which is opposite the editorial page. For example, News Editor Maryfran Johnson can be reached at mjohnson@cw.com.

☞ Our **CompuServe** account number is 76537,2413. Direct subscription inquiries to CompuServe: 73373,1230.

☞ Letters to the editor and other editorial-related messages can be sent via **Internet** to letters@cw.com

☞ **CLIENT/SERVER JOURNAL:** Contact Editor Alan Alper at (508) 820-8115 or via Internet at aalper@cw.com

☞ **SUBSCRIPTIONS:** Call (800) 669-1002.

☞ **REPRINTS:** Contact Sharon Bryant at (508) 820-8125.

Inside Lines

Talk about your wrong numbers

You think you've got problems? Be glad you're not Ralph Guditz. His Bellevue, Wash.-based CAD file translation software firm, Fugu Ltd., has a phone prefix just one digit away from Microsoft's main switchboard. What's worse, Guditz says, is that many Microsoft employees don't know their own main number and give out his instead. Last week, it turned up in Microsoft Brazil's internal database, and last year it was in Microsoft Ireland's internal database. In the past five years, this tragedy of errors has attracted 50,000 wrong-number calls, or about 100 or so every week. Guditz has even had two death threats from frustrated callers. "We've even offered to print up stickers to put on all their company phones" with the correct number — (206) 882-8080 — but no dice, Guditz said. You'd think Microsoft's super smarties could learn their own number, wouldn't you?

Always check the fine print

In a press release it pumped out Aug. 1, Computer Associates stated that the merger of Legent with CA's VR126, Inc. subsidiary wouldn't be completed earlier than Nov. 6. But it turns out that's legal mumbo jumbo meant to satisfy the Delaware court system, where CA is incorporated. CA is more likely to close the Legent deal in the next two weeks and plans to publish a white paper on its Legent product directions by October, CA sources tell us.

Cabletron makes new friends

Cabletron will try to shore up the weak systems management support available through its Spectrum enterprise network management platform next week. The Rochester, N.H., company, better known for its internetwork gear, will announce several alliances that integrate popular systems management software with Spectrum. Partners with new or improved products will include such vendors as CA/Legent and Tivoli Systems.

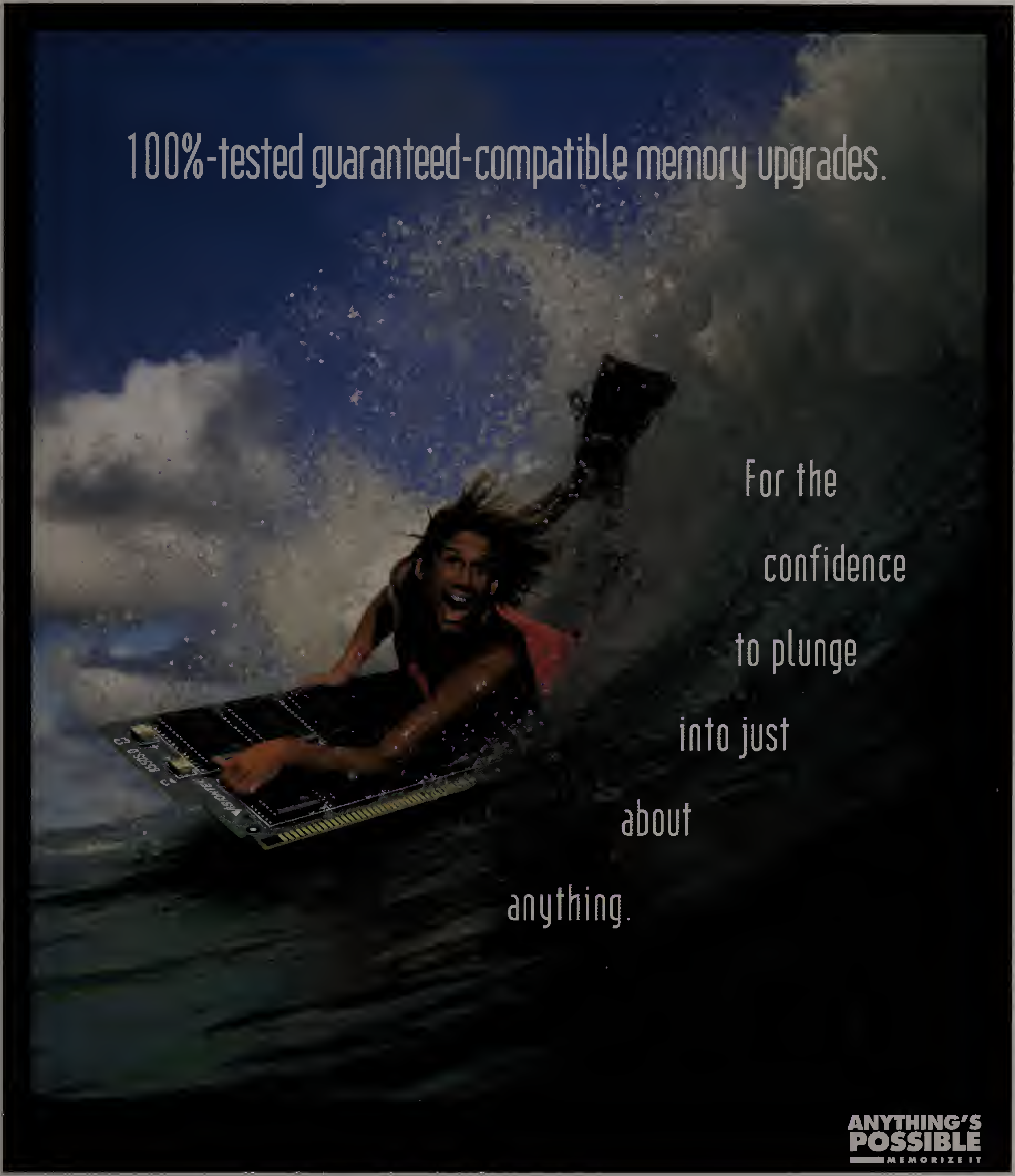
Everybody sing along now: Multimedia!

Network planners faced with adapting to the bandwidth demands of multimedia communication should get help from an unexpected source. The video karaoke craze in Japan really is the driving force behind the research and development of chips that compress audio and video, according to International Data Corp. analyst Rick Villars. He made that observation last week at TCP/IP Expo, during a discussion of efforts under way to enable high-bandwidth applications to work over slow links.

X marks the Windows spot

It seems that the No. 2 X Window System terminal vendor, Network Computing Devices, just couldn't resist jumping the gun on a product aimed at archrival Tektronix. Network Computing said last week it has reached an agreement with Insignia Solutions to develop software that delivers Windows applications to X terminal screens. But the formal announcement is still a few weeks away, Network Computing acknowledged. Meanwhile, the No. 3 vendor, Tektronix, has been shipping its Windd for Windows-on-X since February, said product manager Lee Rainey. "There has been a dogfight between the two firms for some time," he said. Meanwhile, No. 1 Hewlett-Packard quietly begins shipping its HP500 Unix-on-Pentium server for Windows-on-X apps this month.

As it assumes ownership of Notes, IBM is also making sure not to mess up its existing relationships with key customers. For example, when Notes was still Lotus-based, Chairman Jim Manzi maintained a "senior face-off" relationship with The Chase Manhattan Bank NA's CIO, Craig D. Goldman. Now that Big Blue is in charge, and Manzi is also an IBM senior vice president, he still reports to Goldman on all Notes-related issues. "It made sense to keep this [reporting structure] intact," the bank executive explained. And it makes sense, too, to keep in touch with Computerworld *about news items or tips. Give us a call on our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News editor Maryfran Johnson can be reached by phone at (508) 820-8179 or via the Internet at mjohnson@cw.com.*

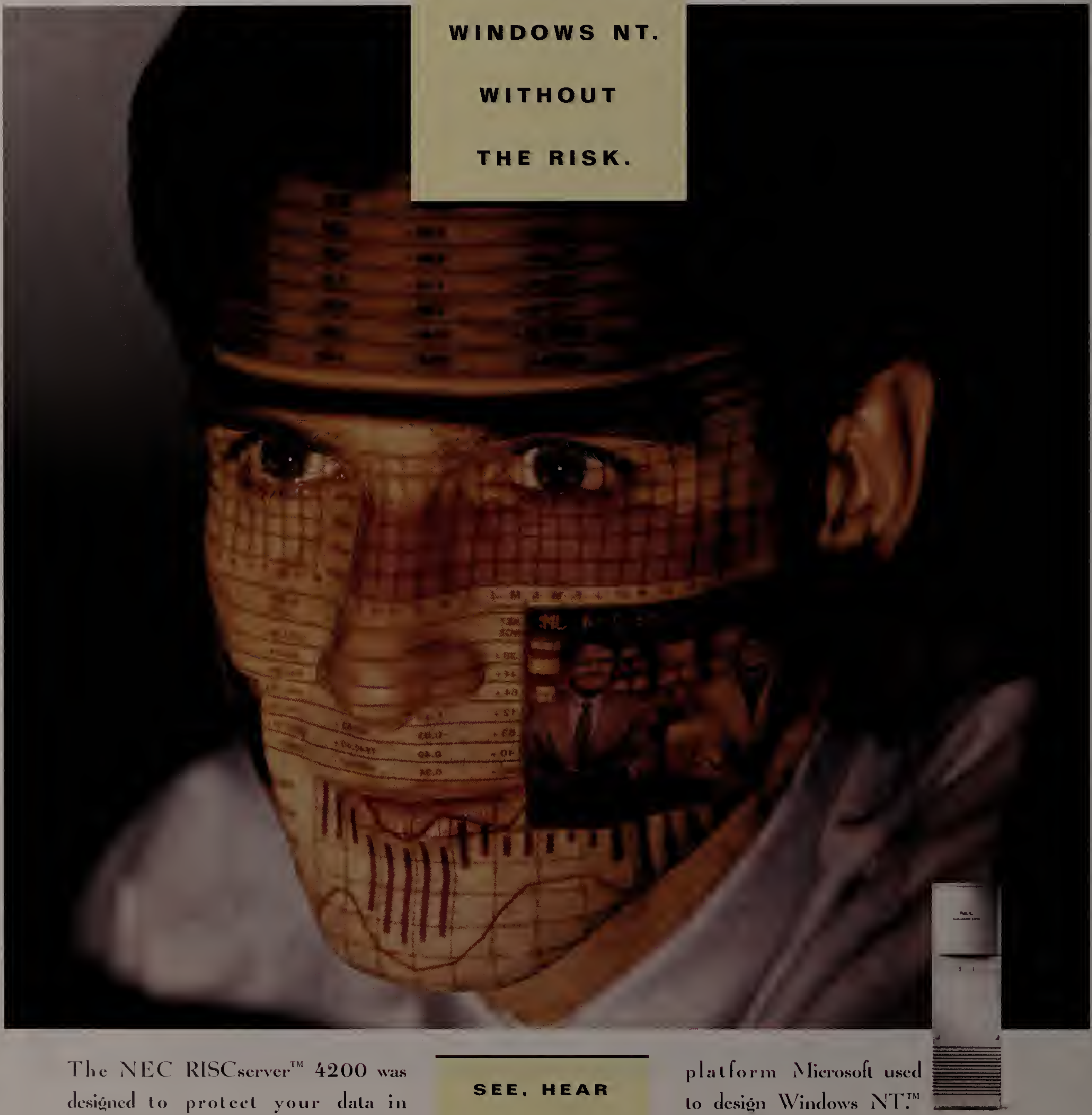


100%-tested guaranteed-compatible memory upgrades.
For the confidence to plunge into just about anything.
ANYTHING'S POSSIBLE
MEMORIZE IT

VisionTek http://www.visiontek.com ©1995

Ride the new wave of productivity with Windows® 95 faster operating speeds. VisionTek's design and manufacturing capabilities give you immediate availability of over 2,000 lifetime-guaranteed memory modules and PC cards to max out performance. Radically. Then, you and your system can really make a splash. **1-800-360-7185**.

VISIONTEK™



THE PERFORMANCE OF RISC AND WINDOWS NT. WITHOUT THE RISK.

The NEC RISCserver™ 4200 was designed to protect your data in business-critical applications. We gave it internal RAID, UPS, an integrated service modem, and ECC memory—all of which ensure superior dependability. But equally as important is the MIPS RISC architecture itself—the same platform Microsoft used to design Windows NT.™ Add to that the scalability of NEC's MultiRISC™ architecture, and you have some powerful reasons to consider the RISCserver 4200. To try the RISCserver 4200, risk-free* for 60 days, call 1-800-709-3434.

SEE, HEAR AND FEEL THE DIFFERENCE.™

NEC

RISCserver, MultiRISC and See, Hear and Feel the Difference are trademarks of NEC Technologies, Inc. All other trademarks and registered trademarks are the property of their respective owners. For information via FastFacts™ call 1-800-366-0476 and request doc. # 97774721. © 1995 NEC Technologies, Inc. *Subject to acceptance in NEC's Try and Buy program. Some restrictions apply. Key #29971